UNITED STATES ARMY NOVEMBER 1978

AVIATION DIGEST

The TRADOC Commander On Army Aviation

an interview with General Donn Starry

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UNITED STATES ARMY
AVIATION DIGEST
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Richard K. Tierney
Editor

About the Cover

The camouflage on the cover of the helmet depicts the Army aviation in support of the ground forces. Cover by Fred Martin

The mission of the *U.S. Army Aviation Digest* is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

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Articles, photos and items of interest on Army aviation are invited. Direct communication is authorized to: Editor, *U.S. Army Aviation Digest,* Fort Rucker, AL 36362.

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VIEWS FROM READERS

Editor:

I would certainly hesitate to criticize a person for expressing his "personal view" or his "true beliefs"—especially when his views and beliefs are based on a great deal of experience in air cavalry and attack helicopter units. But it seems to me that the author's emotionalism is causing him to ignore what seems obvious to some of us "far removed" guys.

"Why Air to Air Missiles On Attack Helicopters?" (*Digest,* August 1978). How about for the sake of flexibility? Sound tactics and proper flight techniques, coupled with appropriate weapons systems, make for success and longevity (on anybody's battlefield). To suggest that a self-defense weapon implies a mission other than, in this instance, tank killing, is pure supposition on the part of the author (smoke canisters on tanks do not perforce imply a mission of laying smoke screens, do they?). To suggest that we will have "people looking skyward—for a few enemy attack aircraft while 20,000 tanks roll under your belly" seems slightly overstated.

I think we can rely on our ground commanders, attack helicopter commanders and air cavalry commanders to exercise their good judgment in the application of the weapons systems provided to them. As with any other maneuver force, I'm inclined to provide suitable and dependable weapons systems, trust in proved training practices, count on the commander's leadership and decisionmaking authority and let him sort it all out. To deny the commander a tool for combat, for what sounds like purely emotional reasons (Batmobile, indeed!), does not support or represent the kind of innovative leadership that has helped make Army aviation what it is today.

LTC Charles W. Abbey
Commander, Hey Div, DOFT
Ft. Rucker, AL 36362

Editor:

I have just assumed command of the Knoxville Armed Forces Examining and Entrance Station in Knoxville, TN. We have from 400 to 600 applicants visiting our station on a monthly basis. I have noted that this organization does not receive any copies of *Aviation Digest* for the applicants or assigned staff (I have 26 military and 10 civilians) to remain abreast of Army aviation happenings. Could your office arrange to start a military subscription through DOD distribution to this organization? I would request that 3 copies be sent on a monthly basis.

Major James J. Rudy
Armed Forces Examining and
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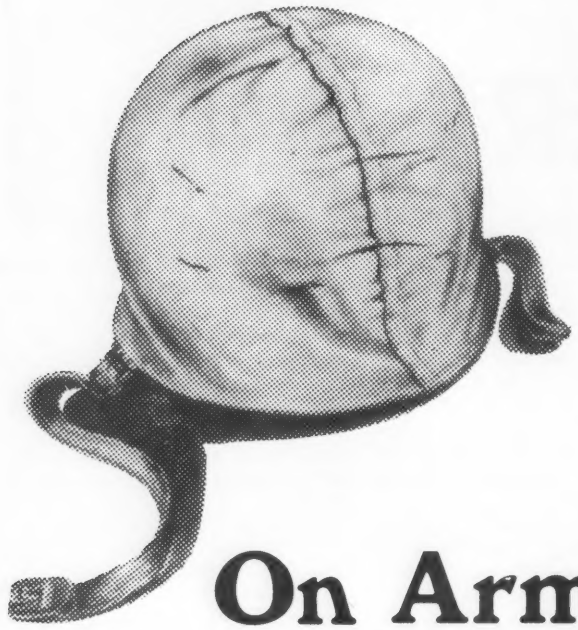
Don't be a turkey... preflight thoroughly

General Donn A. Starry, TRADOC Commander, shares his thoughts on Army aviation with the *Aviation Digest's* readers



On Army Aviation

Implementing Doctrine and Hardware

General Starry, you commented recently that the first lesson you learned as V Corps Commander was that there is too great a time gap between writing and implementing doctrine—and that the same was true for training developments. You stated that you hope to shorten these gaps. Many people feel the same holds true for developing and issuing items of equipment to the field. The men and women in the Army aviation community are anxious to help you achieve your goal to shorten these lead times. Can you share your thoughts, sir, about how they can best do this?

General Starry: The development cycle is painfully slow. It's slow for several reasons—slow because in our country we insist on competition at every stage of development as well as procurement. Because everything is in competition, any development requires virtually starting all over again from the beginning. We don't have a dovetailed product improvement program of the kind that's so characteristic of the Soviet system. We are slow because we have an enormous layering of bureaucracies—each one of which wants to rule on every stage of every development to an excruciating degree of detail. A system like that can't function very efficiently.

But, your question was what can the men and women of the aviation community do? The answer goes something like this: Within that system I just described, recognizing all its shortcomings, one thing that slows down the process is the lack of direct, positive, continuous coordination between the user, who develops the requirements, and the developer who produces the equipment.

Developers will tell you that the users have great trouble making up their minds and are, therefore, always changing the requirements—and every time they change the requirements the developers have to do something to the equipment that takes more time. So the developers will tell you that it's really all the users' fault.

The users will tell you that the developers should have been smart enough to do most of those things in the first place, because most of them are common sense, and that the developers are looking for excuses to drag the development out longer than is necessary.

The truth is no doubt somewhere in between. But

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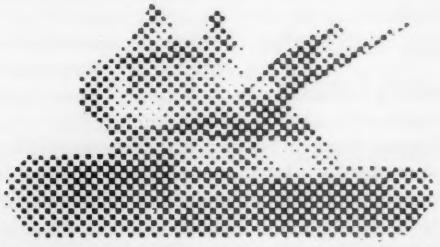
the users have a compelling requirement to stick with the developers from the very beginning, and not change requirements unless there is a good need for doing so. When requirements are changed, it should be only after full and complete assessment of the effect of those changes on the development cycle.

Let me give you two examples. Following the Yom Kippur War, we convened the Tank Special Study Group at Ft. Knox, KY, to assess the lessons of that war as they related to requirements for the XM-1 tank. We did that because we were afraid that we, the user community, would all too quickly translate lessons of the October War into changes in the tank development program. We didn't want to do that unless there was a good reason, unless we had first assessed the impact of changes on the development. In the end we made some changes, but we made them in a very orderly way, we made them after considerable deliberation and weighing out of alternatives, and we made them in such a way that they had little, if any, effect on the timing of the development cycle.

Second example, the AAH. When I was at Knox, I met every 6 months with the project manager to review the military need document. The reason for those meetings was that everybody wanted to put something else on the helicopter. Aircraft survivability equipment, armament, fire control, you name it. If you let a process like that go on, the AAH would soon look like a B-52. So there has to be discipline in the system—continuous discipline.

To shorten development time we must have the most detailed kind of attention and an absolute determination by users and developers alike to make sure the thing is not going to get out of hand.



The Corps Battle Tape *Army aviation has developed into a viable component of the combined arms team, yet the Corps Battle Tape describing the blunting and reversal of an enemy thrust included only limited use of Army aviation assets. Was this due to a uniqueness in that particular scenario; do you envision Army aviation in a more expanded role in the combined arms?*

General Starry: Helicopters are not in the tape, and they were not in the original simulation, because at the time we did not know how to work the exchange ratios with the attack helicopter. It's a simple matter of not having the data available to put into it. The battle that was played in the Corps Battle Tape is the result of about a dozen simulations played by hand on maps, in an attempt to figure out if we could fight that battle and win. We know how to work the helicopters in now, and later versions of that battle account will include them.

RSI Impact On TRADOC *General Starry, the President has told the NATO community that the U.S. will increase its support in the rationalization, standardization and interoperability (RSI) arena. How do you perceive the impact that this will have on the TRADOC combat development and training programs?*

General Starry: It will probably slow down the combat developments process simply because we now have to include foreign candidates among alternatives considered to satisfy requirements. It is very difficult to get good data on foreign candidates; languages barriers, different manufacturing process in different countries, and technology differentials all contribute to this.

RSI offers its greatest advantages in the co-usage of large-scale commodities. Consider a situation in which a U.S. tank crew could drive into a British rearm-refuel point, park alongside a Dutch tank crew, and draw fuel, parts, ammunition and food to put their tank back in battle. Now that's real interoperability. Standardization doesn't appear to offer nearly as much as does interoperability—the interoperability of ammunition types, the interoperability of rations, the interoperability of fuels, and most importantly the real interoperability of operational forces. We should be able to use the maneuver and fire support forces—ground and air—of other countries just like they were our own. There is more to be gained by that kind of interoperability than by any standardization of hardware.

Army Aviation Branch *The Aviation Career Incentive Act of 1974 imposes a career burden on the officer who wants to be an Army aviator and maintain basic branch qualifications, and be competitive in each. This has led some to believe that the "dual track" approach is detrimental to the career officer and that a separate Army aviation branch should be established. What are the merits, if any, regarding a separate branch for Army aviation?*

General Starry: I've heard the argument on both sides. I really believe Army aviators must be people who understand the ground battle equation intimately. Particularly is this so in scout and attack helicopters. They've got to work together as a team with the ground forces. We must also get Air Force fighters in there with the helicopters as a team, as we did in the Joint Attack Weapons System (JAWS) test.

I believe it would be a mistake to make a separate corps of aviation. Even if we call it the Army Air Corps, it would still feature career aviators who aren't part of some other branch, and who therefore don't understand the battle as they must.

I realize the burden on the individual. But in the long run we've got to mitigate the adverse affects of OPMS, as the aviator community views them, in order to take advantage of the great gain that we get by having those officers understand the ground battle.

TRADOC School Model 76

Because of the continuing force reduction on the training base, do you envision any refinements/realignment to the TRADOC School Model 76 or changes in training philosophy?

General Starry: The school model gives everybody a common baseline from which to audit what's being done with resources in pursuing missions.

There's nothing sacred about the school model—if the commander of the Aviation Center wants to readjust something within house, I'll support him so long as there is some way of auditing from the model to what he has done with the manpower and money.

Changes in training philosophy are a different matter. It is quite clear to me that we can barely afford to go ahead with the training philosophy we are using now. The cuts that have been levied on the training base aim at the heart of the way the Army trains its Soldiers. We are on the verge of having to do much less individual training in the institution, much more in units. That increase in individual training will inevitably detract from unit readiness.

Army Aviation's Role In The Offense

Given the survivability problems faced by all units on the modern battlefield, what role do you see for Army aviation in support of offensive operations?

General Starry: I'll answer that primarily with regard to combat aviation—scouts and the attack helicopters—because they contribute most to the battle equation, and at the same time suffer most from whatever survivability problems there are out there. I see for them two possible roles in the offense. One is to exploit a breakthrough. After a penetration of the first defensive belt has been made, then attack helicopters and scouts go after the soft targets that lie between the echelons—command and control centers, logistics facilities, traffic on the roads.

We shouldn't put that team in against prepared defenses which have large numbers of effective air defense systems mixed in—for obvious reasons, unless of course we could suppress the air defenses effectively.

The second role for combat aviation in an offense, and probably the most important one, is as an economy of force. Suppose the commander has massed brigades and battalions to get the necessary force ratios to achieve a breakthrough. In the areas from which he has taken those battalions and brigades he's left some units spread pretty thin on the ground. So thin that they really can't defend very well, and perhaps so thin that they can't cover the area. In this case the aviation team becomes air cavalry—they go looking for the enemy, and attack him, on the flanks and in the rear, slow him down, hold him up, destroy him if they can, until ground forces can get there and join the team. Then, they can work the equation together as an air-ground team.

In the offense we could use the air team on flank security, just as we once used fixed wing aircraft. I would see helicopters together with some fixed wing Air Force aircraft in that mission. But I think the primary role for helicopters, because they belong to the ground commander, is first in covering areas from which we have taken forces to mass, and second—if the ground commander can pay the price for suppression—in the exploitation of the breakthrough, particularly of the first and second echelon defensive belts.

Attack Helicopter Gunnery Training

What do you think it will take to get Armywide attack helicopter gunnery training on a par with tank gunnery training?

General Starry: We are just beginning to realize the dimensions of the aerial gunnery problem in terms of ranges. Some people still haven't become aware of it. You are certainly aware of it at Fort Rucker, and they are aware of it at Fort Knox. Gradually the word is getting around. But elsewhere people are just now beginning to ask how we might let attack helicopter gunners practice their trade.

What has happened is that helicopter gunnery is a competitor for range facilities—for those already limited spaces and impact areas, and it competes with tanks, infantry fighting vehicles and artillery for those range areas.

Gunnery for attack helicopter units should be as important an event as tank gunnery is for tank units.

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They're going to have to pay as much attention to that as they do to flying proficiency.

General Smith [MG James C. Smith, Commander, U.S. Army Aviation Center]: As an extension to that, sir, I noticed recently when we started defining the National Training Center activities, that we did not mention the aviation maneuver type units. If we are going to do combined arms live fire do you perceive that we are going to have to include the aviation units in those cases?

General Starry: Yes, we are. In fact I've issued instructions to include helicopter instrumentation in the conceptual instrumentation packets that are drawn up. Helicopters may prove more difficult to instrument than ground systems, especially since we're asking for realtime casualty assessment. Difficult though it may be, we've got to try.

Recognizing Army Aviation's Combat Capabilities

Many in the Army aviation community feel that there is a reluctance among other members of the combined arms team to accept or recognize Army aviation's combat capabilities. What do you feel needs to be done both in academic and field training to correct this?

General Starry: We tried to correct it academically in the schools by focusing on the combined arms equation in describing battle. In the field it is a more difficult problem. It's not at all unlike the problem of how to get infantry to train with the tanks. With battalions of infantry over here and battalions of tanks over there, they frequently get together only when they go to field for major exercises. Now we've got infantry battalions, tank battalions and attack helicopter units—and they only get together when they go to the field for maneuvers. That isn't good enough.

The biggest problem in the combined arms equation is command and control of the battle. The commander's problem is one of putting together tanks, infantry, artillery, helicopters, fixed wing aviation in a coordinated battle. I submit that if we don't train that way we won't know how to do it when a war starts. So, it's essential that we train in a combined arms mode.

Annual Specialty Exam For Every Officer

Do you support an annual specialty examination being made a part of every officer's education and training program similar to the annual aviation written examination that aviators have been taking for many years?

General Starry: Yes, I'm in favor of it. I say that because an officer corps requires of its members a certain amount of technical skill—it varies with grade—and a still further amount of leader skill—the ability to get things done with people in a military unit. Neither comes easily. Both require study. And there must be a way of checking to see that those skills are being developed and sustained in the officer corps.

I've been quoted as being in favor of SQTs for officers. I'm not sure what kind of SQT it ought to be, but I'm convinced we need it.

General Smith: I might add that the aviator's written exam is an open book, but it does increase his proficiency.

General Starry: That's all right. They at least have to read the material enough so that they know where to go to look for it. That in itself is a step ahead.

Armored Cavalry, Mobility, And Air Cavalry

To perform most cavalry missions a unit requires a mobility differential, unique training and a tailored organization. In light of the Army's armored cavalry units' loss of mobility differential, what are your views on the possible replacement of these units with air cavalry organizations?

General Starry: It isn't just mobility differential. Ground cavalry since World War II has been getting heavier and heavier. We really haven't had cavalry with a great mobility differential over the rest of the force since the days when General Smith was a lead scout in the 6th Cavalry. In those days with armored cars and jeeps, cavalry had a big mobility differential . . . but it had one other thing that everybody forgets—it had a great communications differential over everybody else on the battlefield.

Those two things—the mobility differential and the communications differential—made that kind of cavalry effective.

Today's cavalry has about 60 percent more communications capability than a similar size tank or mechanized combined arms force. But it's increasingly apparent today that we probably cannot build a ground platform to give us a significant mobility differential. As a result of our experience with ground scout vehicles developments, I became convinced that if we really want a mobility differential we have to get an aerial platform. That's why I'm such a strong believer in air cavalry.

I don't know whether we can afford to have both air cavalry and attack helicopter units. I tend to believe what we really ought to do is build our aviation units with enough scouts and attack helicopters so that we can tailor them—task organize for a cavalry type mission, then, later employ the unit as an attack helicopter unit by reconfiguring ordnance loads and task organization.

I find it completely reasonable that an attack helicopter squadron could be employed on a flank security mission this afternoon, with lots of scouts and not very many attack birds, and tomorrow morning go out in a massed attack with a few scouts and lots of attack birds. So it may be that what we need to do is change our doctrinal approach to the way we employ our aviation units, the way we organize for combat, and the operational concept that we use in the employment of our aviation units.

General Smith: Recognizing what you've said, would you support the idea of a study that would determine as one of its objectives whether such a force as you're talking about could replace the current division ground cavalry squadron?

General Starry: I think we need some ground cavalry in the division—the aircraft can't do it alone, someone must be on the ground. I would say that what we need to look at is what mix of air-ground cavalry is appropriate to each echelon of command; what mix of air-ground cavalry do we want in a division; what mix of air-ground cavalry does the corps commander need?

Programed Text Education Method *The programed text education method, self-paced, has been used for some time at the training base schools. How would you characterize the overall effectiveness of the program?*

General Starry: Self-pacing has a couple of benefits: One, it allows Soldiers to learn at their own pace, and so makes learning a little bit more exciting. Two, because we can graduate some Soldiers earlier out of the training base, we've been able to generate several thousand manpower authorizations out of the student account. We have converted those into combat maneuver units. In this way we've generated about four brigades of maneuver forces just through student account savings.

How effective is it? Two things need to be said here. Good self-pacing is aided a great deal by good literature, that is good training materials. In fact, it's most effective when used with materials designed for that purpose. Not many people in the military, and not many civilian firms, know how to produce that kind of material. It's a very scarce capability. So we're slow in producing the kind of literature that lends itself to good self-pacing.

Second, we don't know much about how many times a Soldier has to repeat a skill before retaining it over a long period of time. Recently, we found some Soldiers who 30 days after finishing a self-paced mechanics course had unlearned about 30 percent of what they had learned. All that says is that we didn't repeat those skills enough in advanced individual training (AIT) for them to retain them. So we don't really know enough about skill repetition to use self-pacing as wisely as we should be able to do.

What self-pacing does not do is reduce student to instructor ratios. In fact, in some skills, it requires more instructors to administer good self-pacing.

Air Cavalry's Role In Europe *What is your view of the role that air cavalry will play in the mid- to high intensity battle scenario envisioned in Europe?*

General Starry: Air cavalry is essential to the battle in Europe. Most European based air cavalry units have been converted to attack helicopter units because we need the tank killing capability so badly. But that doesn't say we don't need air cavalry. I'd prefer to see us do the air cavalry and attack helicopter business as I described it earlier.

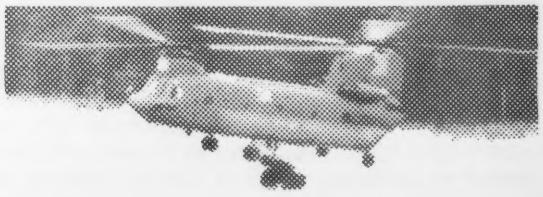
Scatterable Mines *General Starry, recognizing the continued development of scatterable mine systems, what role do you see for Army aviation in mine operations in the future?*

General Starry: I believe we should deliver scatterable mines principally by something other than helicopters. Places where we can use scatterable mines to best advantage are places I don't want to ask a helicopter to fly. We should retain the capability certainly, but it should not become a primary mission.

Aviation Digest: In closing, the ***Aviation Digest,*** in behalf of its readers, wishes to thank you for sharing your thoughts about Army aviation.

Glossary

AAH	advanced attack helicopter
AIT	advanced individual training
JAWS	Joint Attack Weapons System
NATO	North Atlantic Treaty Organization
OPMS	Officer Personnel Management System
RSI	rationalization, standardization and interoperability
SQT	skill qualification test
TRADOC	Training and Doctrine Command



TOW equipped Cobras prepare to land during REFORGER training

Autumn Forge 78/REFORGER

TASK FORCE 229 represented the 101st Airborne Division (Air Assault) in the REFORGER phase of Autumn Forge 1978, North Atlantic Treaty Organization's (NATO's) largest exercise conducted in Europe.

The task force, commanded by Lieutenant Colonel J. R. McQuestion, was comprised of the 229th Attack Helicopter Battalion; Troop A, 2nd Squadron, 17th Cavalry; and elements of the 5th Transportation Battalion, 801st Maintenance Battalion, 426th Supply and Service Battalion, 326th Medical Battalion and support elements assigned or attached to Division Support Command (DISCOM).

About 1,100 Ft. Campbell, KY Soldiers took part in the REFORGER deployment and field exercises with Allied forces in Europe.

Unlike other Autumn Forge units that used equipment and supplies stored in Germany, Task Force 229 transported its own equipment.

Autumn Forge linked a number of training exercises to increase readiness of combat forces and improve working relationships of NATO forces.

As part of an agreement among the U.S., United Kingdom and the Federal Republic of Germany, American air and ground combat forces have returned to Germany since 1967 to demonstrate Allied solidarity. Autumn Forge showed the U.S. commitment to defend western Europe and its ability to reinforce NATO forces quickly.

REFORGER is the deployment phase for the Army, while CRESTED CAP is the Air Force's deployment. Combat troops were flown to Germany, while 37,000 tons of equipment and supplies were sent by ship from east and gulf coast ports. Some of the tactical field exercises in Europe were Gryphons, Galore, Red Tornado and Saxon Drive. The exercises were conducted in Germany, Belgium, Holland and Gibraltar.

Other American forces in the NATO exercises included more than 6,100 Soldiers from the 5th Infantry Division (Mech) from Ft. Polk, LA; 3,300 from the 4th Infantry Division at Ft. Carson, CO; and two battalions from the 9th Infantry Division at Ft. Lewis, WA.

The stateside units were integrated with European-based U.S. forces and with the Allied forces in the Autumn Forge field exercises. REFORGER resumed after the European exercises were ended and covered the redeployment of American forces back to home bases.

Three themes were stressed during Autumn Forge:

- **Readiness.** To avoid developing a "garrison mentality" among NATO forces, the exercises were used to increase the realism of training, upgrade forward supplies, reexamine ammunition postures, tighten alert procedures and search for means to evaluate the actual readiness of units and personnel.
- **Rationalization.** The concept is to ensure that NATO combat forces could operate together effectively.
- **Reinforcement.** Developed an integrated use of vast military and civilian transportation resources to deploy (reinforce) combat forces to Europe rapidly.

Although the 101st's participation was in September and October, the entire Autumn Forge 1978 series lasts from August through November.

Total teamwork is displayed as the crewchief looks on while pilots start their Cobras as part of the 101st Airborne Division's (Air Assault) participation in REFORGER 1978

The human element appears as a dominant cause factor in most Army aircraft mishaps. Consequently, if we are going to significantly improve safety, we must first deal with this element. And one of the most effective means available is . . .

UNIT TRAINING

BEFORE THE JET age came into its own, the copilot aboard a DC-4 airliner loaded with passengers became curious as to what would happen if the internal gust lock control lever were to be raised to the "lock" position while the aircraft was in flight. At some point along their route, curiosity got the best of him. Without a word to the pilot, he leaned over and momentarily lifted the lever from the floor. He got his answer in a hurry. The aircraft responded by promptly going into a roll. Before he could disengage the lever and the pilot regain control, the aircraft reached a near-inverted attitude, literally bouncing the passengers off the walls.

Needless to say, the copilot's career in commercial aviation came to an abrupt halt, but this incident did not curb man's appetite to do his own thing. Today, we still tend to follow our own whims—even when we know better. Obviously, we have an immense need for the right kind of knowledge, the right way to obtain it and for some means of harnessing an adventurous human spirit.

A properly designed and efficiently administered unit training program can fulfill these needs and hone a pilot's skill to perfection in the process. It is a proven fact that wherever a well-run training program is in effect, the accident rate is low. But improved safety is not the only benefit to be derived. Other advantages include standardization of procedures, improved techniques in every area, successful mission accomplishment, increased self-confidence, higher morale and top performance.

A new pilot fresh out of flight school has acquired the necessary knowledge and skills he needs to become a proficient aviator, and he is eager to excel. Nevertheless, he lacks experience. It is one thing for him to fly under the hood in calm weather with an IP beside him, and quite another to inadvertently encounter weather conditions that suddenly put him on instruments when no IP is on board. Going on instruments unexpectedly, especially over unfamiliar terrain while trying to navigate, can be a traumatic experience. Should some in-flight emergency, such as an overheated battery, arise to complicate matters, an already bad situation can rapidly deteriorate into a critical one.

But even in the absence of any system failure, inadvertent IMC is often all that is needed for an inexperienced pilot to become involved in an accident. It has happened more than once. In one instance, an aircraft flew into a sudden rainstorm. The pilot developed vertigo and crashed. An effective unit training program would have ensured an inexperienced aviator would not have been placed in such a situation on his own.

A more recent accident involved an OH-58 pilot who became disoriented while hovering in snow. One main rotor blade struck the ground, causing the mast to separate and severing the tail boom aft of the horizontal stabilizer. The aircraft then ended up on its left side. This pilot was fortunate. A bit shaken up, he managed to exit the aircraft through the right cockpit door uninjured.

To begin with, this pilot was flying in weather conditions beyond his capabilities. Further, he persisted in his attempt to continue flight even though he had previously experienced spatial disorientation in a whiteout. He was not adequately trained nor did he have knowledge of the techniques for hovering in falling and blowing snow. In addition, the flight commander, who had already landed his aircraft without problems, failed to make this pilot in his flight aware of the snow hazard.

Again, an effective unit training program would have tailored training requirements to correspond to unit needs. It would have ensured all pilots were knowledgeable and proficient in all techniques associated with flight over snow-covered areas, and thoroughly familiar with the information provided in TC 1-12, Cold Weather Flying Sense.

ON HIS OWN

It must be remembered that the new pilot has become accustomed to having assistance—someone to rely on. Namely, the IP. When he embarks on his own, no one is available to make his decisions for him.

In gaining experience, the new pilot finds he must not only develop proficiency in handling his aircraft but also, and what may be even more important, in handling situations—making right decisions and coping with any problems that may arise. Without benefit of unit training, he may acquire this experience on his own. Consequently, he may pick up wrong habits and develop self-taught practices or procedures not found in the operator's manual or contrary to those published. Sooner or later, this means trouble.

Assuming the inexperienced pilot has progressed this far, a third problem begins to emerge. This one can take either of two forms diametrically opposed to each other. If all goes well, he will gain flying proficiency to the point he can handle his aircraft in the air with the same dexterity a professional water skier

handles his skis on the water—and a dangerous overconfidence can result. On the other hand, if all does not go well and he has experienced a series of "narrow escapes," he may very well develop a serious lack of confidence in himself and his abilities. In either case, he will not mature into a properly professional aviator Army flying demands.

The point is a simple one. We don't convert a nonswimmer into an olympic champion by teaching him the basic strokes and then giving him access to a pool with the admonition to practice a specified number of hours each month. While he may not drown, his chances of becoming champion material on his own are virtually nonexistent. Similarly, without proper and continuous training, the chances for an inexperienced pilot to realize his full potential are equally slim.

HELPING HAND

In a sense, then, unit training takes the place of the instructor, or "helping hand," after a pilot leaves flight school. And this kind of helping hand is necessary not only for the new aviator but for the seasoned one as well. Neither outgrows the need for it. The veteran aviator left to his own designs can develop a case of severe overconfidence to the point his technique can become sloppy. Further, he may become so familiar with routine missions that he may disregard established procedures.

Another important purpose of an effective unit training program is that it surfaces an individual's strong points as well as his weak ones, and points them out not only to the pilot involved but also to his commander. Armed with this information, the commander can intelligently assign missions within the capabilities of his pilots, and provide any necessary training. His failure to know the limitations of his pilots can result in mishaps.

Recently, during field exercises, the crew of an OH-58 was detained after completing a mission to a field location because it was thought the aircraft might be needed for another mission. The crew made several requests to be released from further duty because of approaching darkness and the need for crew rest. These requests, however, were denied. Finally, around 2100 hours, the aircraft was released for flight back to the training area which was located on flat terrain devoid of trees or other vegetation. While on final approach to an unlighted landing pad, the aircraft impacted the ground in level attitude, causing one minor injury and major damage to the aircraft estimated at $250,000. The crew was fatigued and both pilots had limited experience in executing night approaches to minimum or nonlighted areas. In addition, no night training program had been established as required. Couple these facts with the extremely low ambient light conditions that existed, the absence of vegetation or other land features to aid in depth perception, and the dust present in the area to further restrict visibility, and it can readily be seen that the demands placed on these pilots far exceeded their capabilities.

COMMANDER'S RESPONSIBILITY

AR 95-5, AR 385-10, and DA Pam 385-1 clearly place the responsibility for accident prevention on the commander and provide guidelines. DA Pam 385-1 outlines the basic steps each commander is to take in organizing his safety program. One of these states he will provide for and require the education and training of personnel in safe habits, practices, and skills. But before an effective training program can be established, much thought and planning is needed. To be effective, a training program must be tailored to a unit's needs. Consequently, no two programs will necessarily be exactly alike—even if the units involved are operating in the same geographic area and using the same type of aircraft. Specific mission requirements of each unit are the prime considerations along with the equipment being used and the environment in which the unit must operate. This includes climate and topography.

To begin with, some type of records system is necessary to show the status of every pilot in the unit. Included should be such basic information as total time flown, date of last physical, last check ride, instrument check and instrument ticket expiration date. ATM tasks required of each individual should also be recorded and scheduled accomplishments marked. One unit has done this by means of a mammoth display board coded to show pilot accomplishments of the tasks required. But regardless of the method used, the important consideration concerning recordkeeping is to have some means of readily checking the qualifications of each aviator and his standing with respect to ATM requirements—to be able to see those areas in which an individual has made progress as well as those where deficiencies may exist and additional training is needed. In this way, not only are a pilot's capabilities made obvious but also his limitations.

However, knowing in what areas training is needed is one thing. Ensuring an individual receives it and develops proficiency is another. One standard procedure is to incorporate training, when possible, with scheduled mission assignments. Even a routine service flight where personnel are simply to be transported from point A to point B can provide pilots an

opportunity to practice instrument training or work on navigational or reconnaissance problems.

Numerous scenarios can be developed that incorporate ATM tasks and requirements in a logical sequence. These tasks should, of course, relate to the unit's tactical mission—the types of things their pilots would be called on to do during an ARTEP. Consequently, when developing scenarios, the supporting unit should be consulted.

SPECIAL PROBLEMS

Although many of these scenarios can be readily worked into the unit's normal operations, some cannot, and these pose special problems. For example, functions such as inserting and extracting troops in confined areas or tactical missions that require night formation flying fall into this category. Special training is necessary in areas such as these, and often the training hours available to conduct it are insufficient. This is where a good record system can be invaluable. While it won't magically produce extra hours for training, it will show the number of pilots qualified to perform a particular type of mission. If this number is insufficient and the supported unit must have that type of support, then some kind of arrangements will have to be worked out to give the pilots the necessary training and experience.

This may mean an increase in flying hours to be allocated for the following year; or it may mean fewer hours to be applied to support missions, with more to training. In any case, the commander will not be guessing when he assigns his pilots to specific missions. He will be aware of their capabilities and be able to provide documentation as to what they can and cannot do. When he makes an assignment, he will know the personnel selected are knowledgeable, experienced, and able to accomplish the mission safely.

CRYSTAL BALL

Coincidentally, an efficient records system can also be a tremendous asset to safety by serving as a "crystal ball" to point out weak or vulnerable areas for corrective action. One unit learned this the hard way. During an interview concerning unit training, the company commander was asked to analyze the information provided by the unit's status board and, based on that information, predict what a PRAM might read should any of his aviators be involved in an accident. After studying the data, he stated that in all probability the aircraft involved would be a Huey. The aircraft would probably be a part of a detached element of the company, involving two or three aircraft, and most likely would be operating in support of a unit in the field away from the company. Consequently, the supervision usually available would not be present. Further, he predicted the accident would occur during a period of limited visibility and would most likely involve a pilot who had not demonstrated proficiency in performing the type of mission assigned him. Almost prophetically, less than a month later, the same unit submitted a PRAM that described an accident that was almost a carbon copy of the one the commander had predicted. A good unit program, then, does more than point out strengths and prepare and maintain unit personnel in full readiness. It also surfaces weaknesses associated with the unit's operations for corrective or preventive action.

Assuming a unit has a well-planned training program, with numerous scenarios tailored to fit its needs, how can the commander ensure a pilot is properly accomplishing the tasks required and gaining meaningful experience? One common procedure is for the pilot to rate himself on his performance. Or, when pilots are paired, to rate each other. One unit, however, has gone a step further. It is not unusual, when a pilot has been assigned a mission, for the company commander, platoon commander, operations officer or an SIP to suddenly announce that he is going along for the ride—and he renders a grade slip. This riding with pilots on an unannounced basis can provide the commander with excellent information as to what the personnel are getting out of the program, and can put recorded data in proper perspective.

Although the emphasis for unit training is placed on pilots, we must not forget the supporting elements. Training is equally important for maintenance and other personnel, including TIs. Sooner or later, experienced mechanics are reassigned. Their replacements may be seasoned or green. In addition, equipment changes, and so do maintenance procedures. Even TIs can become lax, especially when they know they are working with mechanics who are thorough and conscientious. Yet, even the best mechanic can inadvertently goof. So, while concern for unit training lies primarily with the pilot, the need for continuous training of supporting personnel must not be forgotten.

All in all, effective unit training sharpens the skills of all personnel and maintains the entire unit in a state of readiness to accomplish its mission. It enhances safety, produces pride in the individual, increases his self-confidence and morale, and ensures peak performance. In the process, it harnesses the human element to the greatest degree possible, channeling an individual's energy towards constructive purposes. The end result is assured mission accomplishment with maximum safety.

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Air Cavalry Attack Troop

Aerial Maneuver + Aerial Firepower = Aerial Combat Power

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IN 1974 THE U.S. Army Armor Center at Ft. Knox, KY, conducted an extremely thorough analysis of the missions, roles, functions, doctrine, tactics and organization of armored cavalry units. This effort, known as the Cavalry Scout Study (CSS) concluded that armored cavalry is required not only to find and fix the enemy but it also

Mission Statement

Air Cavalry Troop	Attack Helicopter Company	Air Cavalry Attack Troop
To extend by aerial means the reconnaissance and security capabilities of ground units. To engage in offensive, defensive, delaying, and economy of force operations as part of a larger force.	To destroy enemy armored, mechanized, or other forces by aerial combat power using fire and maneuver as an integrated part of the combined arms team during offensive, defensive and retrograde operations.	To find, fix, and destroy armored, mechanized, or other forces as an aerial maneuver unit using fire and maneuver as an integrated part of the combined arms team during offensive, defensive, delaying, economy of force, and security operations.

Figure 1

Glossary

AAH	— Advanced Attack Helicopter		of the Army Study III
Abn	— Airborne	ARM	— Armor
ACAT	— Air Cavalry Attack Troop	ARTY	— Artillery
ACAP	— Air Cavalry Attack Platoon	ASH	— Advanced Scout Helicopter
ACCB	— Air Cavalry Combat Brigade	CSS	— Cavalry Scout Study
ACR	— Armored Cavalry Regiment	DS	— Direct Support
AGG	— Aggregate—total personnel	EM	— Enlisted Men
Air Cav	— Air Cavalry	FARRP	— Forward Area Refueling and Rearming Point
AH	— Attack Helicopter	Inf	— Infantry
ARCSA III	— Aviation Requirements for the Combat Structure	Mech	— Mechanized Infantry
		METT	— Mission, Enemy, Terrain and Troops available
		O	— Officers
		OPs	— Outposts
		PFC	— Private First Class (E-3)
		SGT	— Sergeant (E-5)
		SP4	— Specialist Fourth Class (E-4)
		SSG	— Staff Sergeant (E-6)
		TACAIR	— Tactical Air Force Aircraft used for close air support
		TOE	— Table of organization and equipment
		UH	— Utility Helicopter
		WO	— Warrant Officer
		19D	— Recon Specialist MOS

Organizational Characteristics

Air Cavalry Troop	Attack Helicopter Company	ACAT
• Finds and fixes the enemy • Mobility permits employment as a good economy of force unit to screen unoccupied areas of the battlefield	• Fights and finishes the enemy • Firepower and mobility permit fire and maneuver over a wide area to provide flexible employment	• Finds, fixes, fights and finishes the enemy • Firepower and mobility that permits flexible employment as an armor aerial maneuver unit which can fire and maneuver or screen as an economy of force
• Employed in conjunction with the ground commander's scheme of maneuver to expand the commander's reconnaissance and security capabilities	• Employed as part of the ground commander's scheme of maneuver which in turn requires close coordination with the ground commander	• Employed as part of the ground commander's scheme of maneuver as a maneuver unit
• Employed over wide areas	• Employed from battle positions	• Normally, employed as platoon size entities permitting controlled and coordinated operations over either a wide or narrow area depending on the mission
• Organization for combat is a combined arms team tailored to perform specific missions	• Organization for combat is a 3 scout/5 attack helicopter team mix which can be committed as a team or in mass by committment of a company	• Organization for combat is four combined arms platoons each consisting of aeroscouts, attack helicopters and a ground reconnaissance element
• Provides the commander realtime information		• Provides the commander realtime information
	• Kills enemy tanks	• Kills enemy tanks

Figure 2

must have the capability to fight, gain intelligence and survive.

The CSS resultant armored cavalry organization was given increased firepower to perform this mission. Air cavalry is an aerial maneuver unit which by aerial means extends these same traditional cavalry missions of reconnaissance and security. This extension through a mobility advantage permits the unit to operate over greater areas and compliments the ground armored cavalry capability to find and fix the enemy. However, air cavalry has only a limited antiarmor fighting capability. Now is the time for the Army to examine the roles of air cavalry and give it an improved capability to fight.

Armor has an aerial maneuver organization capable of fighting on the modern battlefield—the attack helicopter company. The attack helicopter company is equipped, organized and trained to perform the mission of killing tanks. It is *not* organized, equipped or trained to perform reconnaissance and security missions of air cavalry. It is time to develop an organization which can do both missions—*Find, Fix* and *Destroy* the enemy. For traditional reasons—lineage, honors and mission description—this unit will be known as the Air Cavalry Attack Troop (ACAT).

Body: The ACAT organization ***must*** be able to perform the roles,

missions and functions of both the air cavalry and attack helicopter units. It is well known that an organization's capability to perform the roles, missions and functions for which it was designed is based upon the total combat effectiveness that only is achieved through interface of equipment, training, doctrine, tactics, personnel and the environment in which the unit operates. Thus, all of these factors must be considered in designing the ACAT.

A discussion of these factors follows and, for ease of interpretation, consists of a side-by-side comparison of the current air cavalry troop and attack helicopter company followed by those salient features needed in the ACAT. All of the information contained in the side-by-side comparison is taken from the current TOEs, doctrine and tactics for employment of air cavalry and attack helicopter units.

Mission: The TOE mission statement for the air cavalry troop, attack helicopter company and ACAT is shown in figure 1.

The ACAT mission statement encompasses the reconnaissance (find), security (fix) and armor destruction (destroy) mission of both the air cavalry troop and attack helicopter company. In the past, the focal point of the air cavalry troop has been its scouts (both air and ground) —the mission of finding and fixing the enemy. The focal point of the attack helicopter company has been its attack helicopters [with] the mission of destroying enemy armor. The focal point for the ACAT must be on both the scout and attack helicopter integrated into an aerial maneuver combined arms team [with] the mission to find, fix *and* destroy the enemy.

Doctrinally and tactically, the organizational characteristics relating to the air cavalry troop, attack helicopter company and ACAT are listed in figure 2.

Once the generic characteristics of the ACAT have been established, it is necessary to identify the specific mission the ACAT must accomplish. For comparison purposes, the specific missions of the air cavalry troop and attack helicopter company are shown in figure 3.

The ability of the ACAT to perform the specific missions mentioned in figure 3 is related directly to the flexibility of the organization in reacting to multiple missions at troop or higher level and the functional subelements of the ACAT itself. Since we have a good idea from our current organizations of what type functions have to be performed to accomplish the specific missions, it is necessary to identify those specific platoon functional capabilities the ACAT must possess. For comparison purposes the current air cavalry troop and attack helicopter company platoon functions are listed in figure 4.

Mission

Air Cavalry Troop	Attack Helicopter Company	ACAT
Reconnaissance: • Area • Zone • Route		Reconnaissance: • Area • Zone • Route
Security: • Screen • Guard		Security: • Screen • Guard
	Offense: • Base of fire • Attack by-passed enemy • Attack flanks • Attack enemy rear areas • Deny terrain to the enemy • Reserve Force	Offense: • Act as base of fire for the force • Attack by-passed enemy • Attack flanks • Attack enemy rear areas • Use as part of exploitation and pursuit force • Use as a Reserve Force
Defense: • Employed as an economy of force unit	Defense: • Employed as part of ground scheme of maneuver • Can be used as a separate maneuver force • Reserve Force	Defense: • Employed as part of the ground commander's scheme of maneuver • Use as a separate maneuver force • Reserve Force
Special Mission: • Raids • Rapid Reaction	Special Mission: • Aerial escort	Special Mission: • Raids • Rapid Reaction • Aerial escort

Figure 3

Attack Troop

The integration of the scout and attack functions of the air cavalry troop and attack helicopter company into the ACAT scout and attack functions is a relatively easy training procedure and is understood by most people familiar with the units. The individual training for both air cavalry and attack helicopter scouts is the same. Similarly, the individual attack helicopter training is the same. The difference in the employment techniques (the focal point of the units) can be overcome by effective unit training.

One area that is not well understood is the role of the ground recon scouts which is critical to the air cavalry mission. They provide the only organic capability the air cavalry has to perform and gather detailed reconnaissance data.

Reconnaissance is accomplished by a combination of mounted and dismounted actions. Dismounted actions are required when it is necessary to acquire more detail than is possible through aerial reconnaissance alone or to achieve greater stealth. Additional ground recon tasks are reconnoitering small built-up areas or thickly vegetated areas, checking a critical section of road or a bridge, locating a suitable ford or bypass to obstacles, checking defiles, and providing collaborating information concerning the enemy.

The ground recon scouts also provide the all-weather 24-hour screen capability of the troop through establishment of a series of OPs. This ground recon capability will be required even after the eventual fielding of the AAH and the ASH for the reasons previously discussed.

As a consequence, a ground recon scouting capability must be retained in the ACAT. The question of whether this capability should be organic to the Air Cavalry Attack Platoon (ACAP) or if it should

Scout Functions

Air Cavalry Troop	Attack Helicopter Company	ACAT
	• Ground coordination	• Coordination with the ground commander
• Gain and maintain enemy contact • Report information on the enemy		• Gain and maintain enemy contact • Report information on the enemy
	• Recon battle positions • Recon routes to and from battle positions • Deploy the attack helicopters • Perform target handoff	• Recon battle positions • Recon routes to and from battle positions • Deploy attack helicopters • Perform target handoff
• Adjust supporting fires (Arty & TACAIR) • Provide security for subelements	• Adjust supporting fires (Arty & TACAIR) • Provide security for AH	• Adjust supporting fires (Arty & TACAIR) • Provides security for the platoon

Attack Helicopter Functions

Air Cavalry Troop	Attack Helicopter Company	ACAT
• Protect scouts • Develop the situation		• Protect scouts • Develop the situation

Air Cavalry Troop	Attack Helicopter Company	ACAT
• Provide a limited antiarmor capability		
	• Kill enemy armor and mechanized vehicles	• Kill enemy armor and mechanized vehicles

Ground Reconnaissance Scout Functions

Air Cavalry Troop	Attack Helicopter Company	ACAT
• Provide detailed ground reconnaissance	• Not applicable since there are no ground reconnaissance scouts in the organization	• Provide detailed ground reconnaissance
• Provide all weather 24-hour screen capability • Provide limited ground holding capability		• Provide all weather 24-hour screen capability • Provide limited ground holding capability

Figure 4

Battlefield Employment Characteristics

Air Cavalry Troop	Attack Helicopter Company
• Operates on the flanks	• Usually used initially as a reserve force
• Complements ground cavalry	• Committed against massed threat
• Economy of force unit—covers gaps	• Timeliness is critical
• Gains information on the enemy	• Required to have the capability of sustained and massed committment
• Has a continuing 24-hour mission	• Has an on-call 24-hour mission
• Conducts special missions	• Conducts aerial escort

Figure 5

Air Cavalry Attack Platoon

Figure 6

be provided by a separate fifth platoon within the ACAT can be argued at length. But the fact remains, the functional roles must be performed. Due to factors of timeliness, unique training (individual and unit), platoon integrity (organize and train as you will fight), the ground recon scout capability was retained as organic to the ACAP.

Battlefield Employment. Traditionally, air cavalry and attack helicopter units usually have operated in different portions of the battlefield. For purposes of comparison, figure 5 shows several characteristics of battlefield employment of the two units.

These employment concepts also must be included in the ACAT. The organization will require the flexibility to operate in any portion of the battlefield, as a maneuver force. To maintain this operational flexibility, the ACAT must consist of more elements than either the current air cavalry troop or attack helicopter company.

Organizational Structure of the ACAT. Since organizations are designed to accomplish specific missions and perform specific roles and functions, it is important to look at some of the general employment principles which have evolved from lessons learned and been proven tactically sound through the years in air cavalry and attack helicopter units:

- Scouts operate in pairs.
- Air scouts require a pilot and a scout observer.
- Units should operate in all visibilities (day/night).
- Attack helicopters generally operate in at least pairs.
- A detailed ground reconnaissance capability is required (ground recon scouts).
- A control element is required for all combat operations (squad through corps).

- To mass effective firepower in the antiarmor role requires 5 to 7 attack helicopters in a platoon maneuver unit.
- The organization should reflect the organization for combat (units are best organized the way they fight).

Using these rules, the organizational designer is faced with either structuring pure platoons of scouts, attack helicopters and ground reconnaissance (as air cavalry and attack helicopter units are organized) and organizing for combat at troop level or designing integrated platoons consisting of all of the needed elements.

While there are advantages and disadvantages to both structural concepts, the overriding consideration must be which structure provides the most effective, best trained organization for combat. In the case of the ACAT, the best structure is an integrated platoon. Platoons are the basic combat elements of an organization. Troops train, live and fight as a platoon and as such are more effective as an integrated unit than pooled assets which are occasionally associated together as teams in combat.

Platoon Organization. The proposed air cavalry attack platoon is composed of an aeroscout section, an attack helicopter section and an aero recon section (figure 6).

- *Aeroscout Section.* The aeroscout section consists of the platoon headquarters and two aeroscout teams of two scout helicopters each. Each scout aircraft, to include the platoon leaders, has a pilot and an aerial scout observer. The primary tasks of the aeroscout sections are those scout functions previously discussed. The scouts perform necessary ground coordination, gain and maintain contact with the enemy, report information on the enemy, do all of the reconnaissance necessary to deploy and fight the attack helicopters, adjust supporting fires (artillery and tactical air (TACAIR)) and provide security to the platoon. The platoon leader provides command and control for the platoon, performs all troop leading functions, and can function as an additional scout, if need be. The aeroscout section provides the Find and part of the Fix portion of the Find, Fix and Destroy mission of the ACAT.
- *The Attack Helicopter Section.* The attack helicopter section consists of five attack helicopters divided into two teams of two attack helicopters each and a section leader's attack helicopter which can operate with either team. The primary tasks of the attack helicopter section are those tasks previously discussed; namely, to protect the scouts, to develop the situation and to kill enemy armored and mechanized vehicles. The attack helicopter section provides part of the Fix and all of the Destroy portion of the ACAT mission.
- *The Aeroreconnaissance Section.* The aeroreconnaissance section consists of a utility helicopter and a seven-member aero recon squad which provides the platoon's ground reconnaissance capability. The members of the squad are trained 19Ds and consist of one SSG squad leader, one SGT team leader, three SP4 scouts and two PFC scouts. The platoon sergeant for the platoon is a trained 19D and has the option of working with the aero recon squad or in the aeroscout section (as a scout observer) depending on where needed to make the maximum contribution to the mission.
- *Platoon Organization for Combat.* The ACAP platoon leader has the option of either employing the platoon as an entity or tailoring the organization into two or more teams, dependent on mission, asset availability and sustainability. Normally the platoon will be organized into two teams for reconnaissance missions (figure 7). Team A will consist of two aeroscouts (); two attack helicopters (); the aeroreconnaissance section (); and the platoon headquarters. [NOTE: *There are no official map*

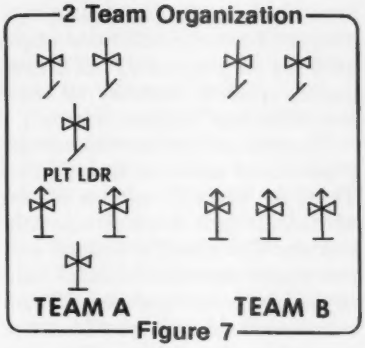


Figure 7

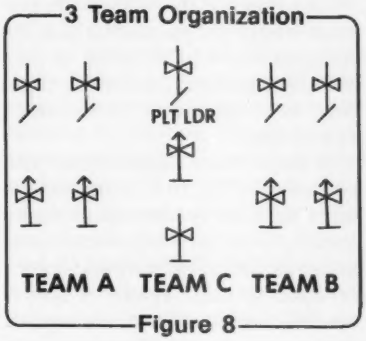


Figure 8

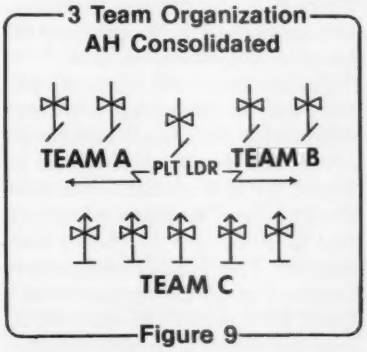


Figure 9

symbols for individual helicopters by type. These symbols were adopted from the proposed NATO helicopter symbol, modified to show the individual helicopter type.]

The platoon leader controls the platoon and serves as the leader of Team A. Team B consists of two aeroscouts and three attack helicopters. The attack helicopter section leader controls the attack helicopter, serves as the leader of Team B and assists the platoon leader in controlling the platoon. This two team organization permits the platoon leader to operate the platoon independently in an area or provides the platoon leader the capability to rotate teams for sustained operations.

A three team organization also can be used (figure 8) if the platoon must perform reconnaissance and security missions over a broad area, an extended front, multiple routes or open terrain. Teams A and B would consist of two aeroscouts and two attack helicopters and Team C of the platoon headquarters, one attack helicopter and the aeroreconnaissance section.

For antiarmor missions the platoon may be organized into three teams with the attack helicopters consolidated in Team C (figure 9). Teams A and B consist of two aeroscouts each. The platoon leader is free to move with whichever team desired. The aeroreconnaissance section can either operate with a team, be "on-call" in the holding area for downed aircraft security, provide forward area refueling and rearming point (FARRP) security, or be used as the platoon leader or troop commander desires.

For special missions, the platoon can be organized into any number of teams to best accomplish the particular special mission depending on the factors of METT.

Techniques Of Movement And Actions On Contact. The specific techniques of movement and actions on contact for the ACAP platoon are the same as those outlined in FM 17-50, "Attack Helicopter Operations," pages 4-7 through 4-15, and FM 17-95, "Cavalry," pages 4-17 through 4-21. Terrain flying will be the key tactic used. Team and platoon movement will incorporate traveling, traveling overwatch and bounding overwatch. Actions on contact will include fire and maneuver.

Air Cavalry Attack Troop Organization. The air cavalry attack troop organization is shown in figure 10.

The troop is organized into a troop headquarters, a service platoon, a flight operations section, and four air cavalry attack platoons:

- The troop headquarters provides the command and control and administrative support for the troop.
- The service platoon is divided into a maintenance section, an aircraft component repair section (formerly, DS maintenance section) and supply section. This platoon provides all of the combat service support necessary to support ACAT.
- The flight operations section controls the combat operations of the troop, performs liaison and coordination for tactical requirements, and coordinates related logistical and administrative support as required.
- The four ACAP platoons permit sufficient flexibility and combat power to perform the multi-

ACAT Organization

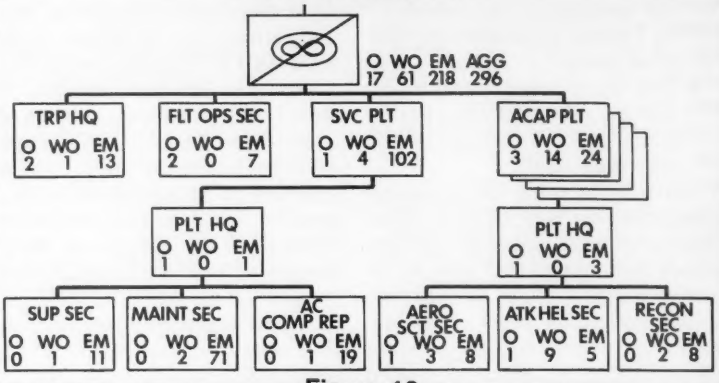


Figure 10

Allocation of Aircraft

	AIR CAVALRY TROOP	ATTACK HELICOPTER COMPANY	ACAT
SCOUT	10	12	20
AH	9	21	20
UH	8	3	7
TOTAL	27	36	47

Figure 11

Attack Troop

Basic Force Structure

	AIR CAV TROOPS	ATK HEL CO	ACAT	PERSONNEL	AIRCRAFT
ARMD/MECH DIV	1	2	2	-130	-5
ACR	1	1	1	-174	-16
ACCB	3	6	6	-390	-15
INF/ABN DIV	3	1	3	-18	+24
AIR ASSAULT DIV	3	3	3	-522	-48

Figure 12

Force Structure Implications For 16 Division Force

	AIR CAV TROOPS	ATK HEL CO	ACAT	PERSONNEL	AIRCRAFT
ARMD/MECH DIV	11	22	22	-1430	-55
ACR	3	3	3	-522	-48
ACCB	3	6	6	-390	-15
INF/ABN DIV	12	4	12	-72	+96
AIR ASSAULT DIV	3	3	3	-522	-48
TOTALS	32	38	46	-2936	-70

Figure 13

missions that will be assigned to the ACAT.

Four platoons provide the troop commander the flexibility to conduct sustained or massed operations in an attack helicopter mission role while simultaneously maintaining an air cavalry mission capability. Thus, depending upon the priorities assigned to the troop, the ACAT has the flexibility to handle a variety of missions.

Personnel. While at first glance the 296 personnel in the ACAT may cause some concern due to the relative size of the troop, it must be evaluated in light of current organizations and the capabilities possessed by the ACAT. The current air cavalry troop with scout observer augmentation contains 218 personnel. The current attack helicopter company with scout observer augmentation contains 252 personnel.

When the ACAT organization is looked at in light of its increased capabilities, the personnel increases are not significant. Furthermore, the troop is commanded by a major with captains leading all of the platoons. The increased experience, training and judgment of this leadership should be able to cope with the size of the unit. As will be shown below, the overall force structure impact of ACAT implementation will result in an overall personnel and aircraft savings to the Army.

Aircraft. For purposes of comparison figure 11 shows the number of aircraft in the air cavalry troop, attack helicopter company and the ACAT. Again the increased flexibility and capabilities of the ACAT reflect increased effectiveness for the ACAT organization and provide justification for the increase in the number of aircraft. With the introduction of the AAH and ASH in the force structure, it is envisioned that the current scout and attack aircraft would be replaced on a one-for-one basis.

Force Structure Implications. A rapid analysis of the force structure implications of the ACAT shows a substantial overall savings in personnel and aircraft. Figure 12 shows a comparison between the current ARCSA III approved force structure and a proposed ACAT structure. The savings of aircraft and personnel reflect only those personnel and aircraft found in a company or troop size unit and do not reflect personnel and aircraft savings which may possibly result from squadron or battalion reorganizations or elimination. Figure 13 uses these personnel and aircraft savings and applies them to the proposed 16 division active duty force. This analysis has been purposely simplified for readability, but it points out a significant overall savings of 2,500 plus people and 70 plus aircraft.

The Air Cavalry Attack Troop shows great promise. A subjective analysis of the roles, missions and functions for the ACAT logically leads to the proposed organization. There is still a considerable amount of analysis to be accomplished concerning personnel, equipment, training, costs and effectiveness of the ACAT. The Armor Center is constantly looking at better organizations for the battlefield. The ACAT appears to be one of the answers. The Armor Center is interested in reactions to the proposed ACAT. Responses should be sent to Studies Division, Directorate of Combat Developments, U.S. Army Armor Center, Ft. Knox, KY 40121. The Air Cavalry Attack Troop (ACAT) may be the armor aerial maneuver unit of the future designed to *Find, Fix* and *Destroy* the enemy. What do you think?

When this article was coauthored, Captain Curtis was the 17th Aviation Group (Combat) operations/plans officer. He has since been reassigned to the 6th ACCB, Ft. Hood, TX and picked up his AH-1S transition at Ft. Rucker, AL enroute. Captain Geis was the operations/plans officer for the Eighth U.S. Army Aviation Section when the article was written. He is now commander, HHC, 17th Aviation Group (Combat)

17th Aviation Group (Combat)

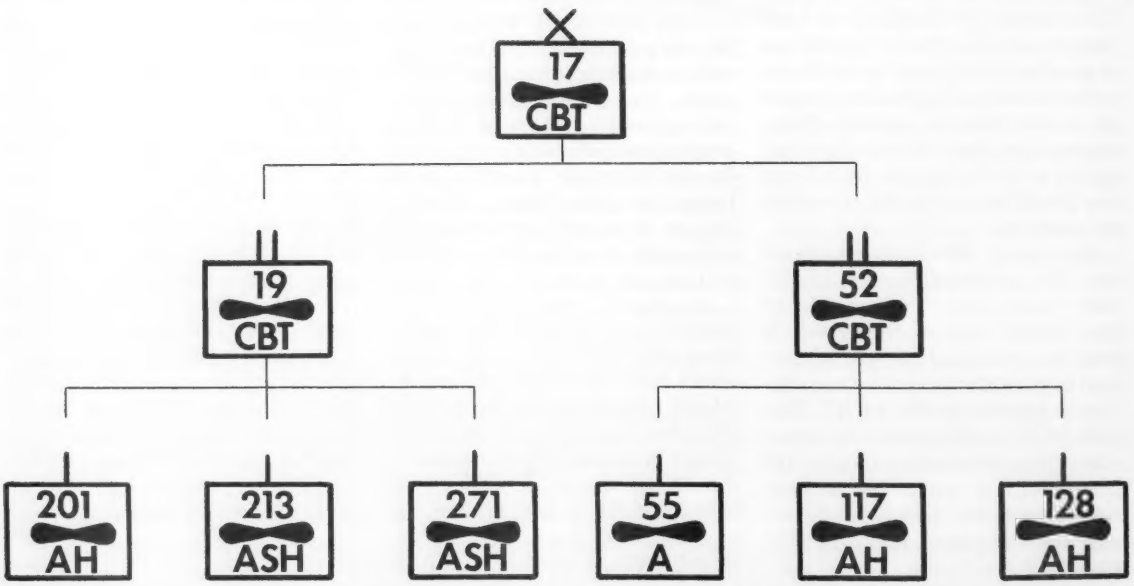
Captain Phillip L. Curtis **Captain Craig E. Geis**

THE 17TH AVIATION Group (Combat) was activated on 1 December 1965 and designated "FREEDOM'S EAGLES." The eagle appropriately represents the aviation function of the group, signifying the transport support capability of deploying troops into battle.

During the conflict in Southeast Asia, the 17th Group conducted operations in Military Region II. This 84,000 square kilometer area represented about 45 percent of the total land area of South Vietnam. During this period the group among others tested the new concept of airmobility. The challenge was met by using helicopters to move fresh troops into battle after the enemy had been located by scout helicopters conducting aerial reconnaissance.

As American strength in Vietnam increased, the 17th Group mirrored this growth. From 1 March 1966, when the group assumed control of three battalions to late in 1968 when the 17th Group grew to six

Figure 1



To promote awareness of the accident prevention programs within the 17th Aviation Group (Combat), Republic of Korea, the group commander, Colonel George F. Newton, and the group safety technician, CW3 James S. Greer, designed the illustrated medallion, shown below. The medallions are presented on the spot to personnel within the group who ensure that established safety procedures are complied with in the performance of their duties. Although the medallion program is still in the early stages, it is considered an important element in promoting a zero accident rate within the 17th Group

Front

Back

aviation battalions and one air cavalry squadron, the mission remained essentially the same.

Late in 1972, it was announced that peace negotiations were in progress. The 17th Group continued to fly its missions and on 28 January 1973, a cease-fire was announced; the 17th Group immediately set about the task of standing down its eight remaining companies. On 16 March 1973 "FREEDOM'S EAGLES" were inactivated, but the period of inactivity would be short lived.

In early 1974 the Commander in Chief, UNC/USFK/EUSA, directed the EUSA aviation officer to develop a concept plan for organizing an aviation group. The purpose of the proposed group was to provide a centralized command and control element for all nondivisional aviation assets immediately responsive to the mission requirements of the CINC, UNC/USFK/EUSA.

After months of planning and conferences, a concept plan was submitted to DA with the CINC's approval. The plan required the 17th Group commander to perform the additional functions of the EUSA aviation officer. DA concurred and on 1 June 1975 the 17th Group was activated; "FREEDOM'S EAGLES" were once again flying, this time in defense of the Republic of Korea.

The 17th Group headquarters operates out of the Yongsan compound at Seoul, Korea. The group has two subordinate battalions, the 19th and 52d Aviation Battalions (Combat), and also has operational control of the U.S. Army Air Traffic Control Battalion Korea (Provisional). The group's subordinate units are positioned throughout the Republic of Korea. The organization and locations are reflected in figures 1 and 2. The mission of the 17th Group includes a wide variety of training and support missions.

In support of the ROK Forward Area Tactical Construction Program, the 17th Group transports construction materials to areas inaccessible by vehicle. The group's CH-47 Chinook helicopters operate daily at maximum gross weight from sea level airfields to 4,000 foot mountain peaks. The "Rock Haul Program," as it is known to Group pilots, affords aviators excellent opportunities to hone their combat mission skills while assisting the ROK Army in the construction of its forward defensive positions. During fiscal year 1977 the 17th Group flew 615 hours in support of "Rock Haul" and moved more than 11,000 tons of construction material. (See next month's ***Aviation Digest*** for more on "Rock Haul").

Another unique mission performed by the group began on 16 September 1975 when a request for assistance was received by EUSA to aid Korean citizens. These Korean

Glossary

CINC	**Commander in Chief**
DA	**Department of the Army**
EUSA	**Eighth U.S. Army**
FARE	**forward area refueling equipment**
ROK	**Republic of Korea**
UNC	**United Nations Command**
USFK	**United States Forces, Korea**

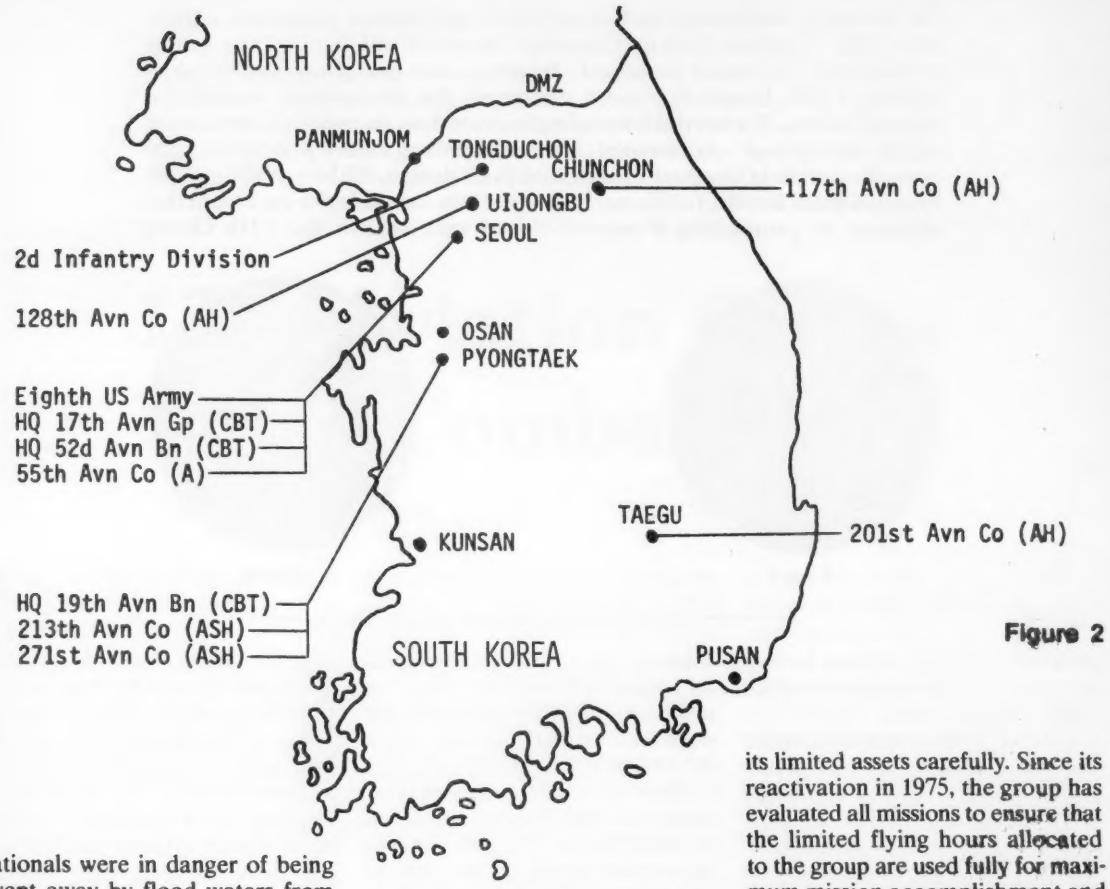


Figure 2

nationals were in danger of being swept away by flood waters from torrential rains. The request was passed to the 17th Group and, within 1 hour, two CH-47s were dispatched from the 271st Assault Support Helicopter Company. In the 3 hours that followed, 106 Korean nationals were airlifted from the flood stricken area. During the 1976 monsoon season, the 17th Group again came to the aid of stranded civilians, rescuing more than 1,000 persons from the killer winds and floods.

The primary order of the day for 17th Group units is tactical training. To support the forward defense concept, the group has developed and implemented innovative plans to conduct extended aviation operations into virtually inaccessible areas. The unique variety of terrain and limited road networks pose significant problems for the resupply of units operating in forward field locations.

Operation Capable Eagle was devised to solve the problems of forward area refueling and resupply. Capable Eagle is a major EUSA exercise conducted yearly in coordination with the Air Force, ROK Army and I Corps (ROK/U.S.) Group units. The 17th Group units deploy to remote, forward positions and conduct numerous tactical airmobile missions. Bulk amounts of JP-4 are airlifted by U.S. Air Force C-130 aircraft to unimproved airstrips for use in the organic FARE system. These exercises have improved Army aviation's capability to support the ground tactical commander from forward positions.

To accomplish the group's varied missions, it is necessary to manage its limited assets carefully. Since its reactivation in 1975, the group has evaluated all missions to ensure that the limited flying hours allocated to the group are used fully for maximum mission accomplishment and crew training.

From its inception in 1965 to the present, the Soldiers of the 17th Group have performed with honor and distinction in peacetime as well as combat. The group continues to provide the essential mobility and tactical support for UNC/USFK/EUSA forces.

The next few years will provide the 17th Group with yet another serious challenge: to continue its outstanding support of UNC/USFK/EUSA during all phases of the U.S. Army's withdrawal from Korea. The group will play a key role in assisting the Republic of Korea Army in planning, developing, training and using its aviation assets. "FREEDOM'S EAGLES" will continue to maintain their illustrious history of being *above the best.*

Aerial view of modern hangar at 158th Military Intelligence Company's Winder, GA facility

Georgia Army National Guard

THE 158TH MILITARY Intelligence Company (Aerial Surveillance), Georgia Army National Guard, is a multifaceted company whose mission is to provide all weather aerial reconnaissance and surveillance for units requiring such support. The methods employed are those of infrared (IR), side looking airborne radar (SLAR), visual and photo. These methods provide hard copy imagery which is developed and later interpreted for all types of military intelligence. Based at Winder, GA, the unit has 18 OV-1 Mohawk aircraft in its inventory.

The unit which has been tasked with missions from Reserve and National Guard units as far from Georgia as New York and Minnesota, may perform valid missions for any state east of the Mississippi river. The aircraft and their respective sensor systems also have supported civilian requests from the University of Georgia and the Environmental Protection Agency (EPA).

To accomplish adequate training of personnel on the varied systems, annual training sites are located as far away as Ft. Huachuca, AZ. Assets in terms of personnel and materials are extensive, capabilities are enormous and productivity in terms of military intelligence are an essential and integral part of the entire surveillance effort performed by the military. As a National Guard unit, the 158th provides the missing link in the active military's role of providing intelligence within the defense establishment.

Left, a member of the 158th maintenance team checks ejection seat in OV-1 Mohawk

Below, OV-1 Mohawk takes off to perform aerial reconnaissance mission for the 158th MI Company

Maintenance Test Pilo

SP5 Michael Turner
Public Affairs Office
Fort Eustis, VA

One of the common misconceptions that people may have is that the purpose of a maintenance test flight is to put an aircraft through a series of phantom maneuvers to prove its airworthiness. Nothing could be further from the truth, a test flight, not a stress flight, is what is taught here."

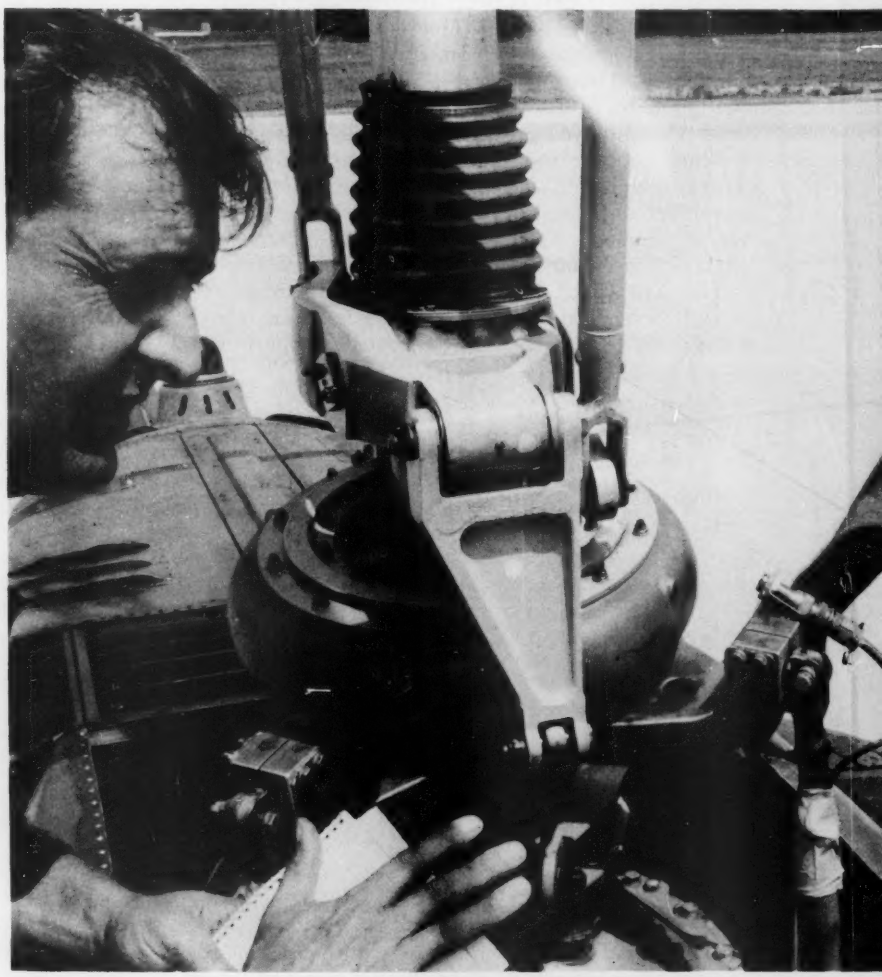
"Here" is Ft. Eustis, VA. "What" is the maintenance test pilot phase of the Aviation Maintenance Officer and Repair Technician Course (AMORTC). "Who," is speaking, Chief Warrant Officer Joseph A. De Curtis, an instructor in the Huey and Cobra branches of the test pilot program.

Three weeks and one day—that's how long maintenance test pilot training lasts for a single type of aircraft. Currently, there are courses, or "tracks," for four different Army rotary wing aircraft. They are the UH-1 Huey, the AH-1 Cobra, the CH-47 Chinook, and the OH-58 Kiowa.

Mr. De Curtis came through the program 11 years ago when the course was in its early stages. Back then the prerequisite to attend the course was to have 1,000 flight hours of which 250 had to be in type aircraft. This precluded a lot of people who would have become maintenance officers and expected to test fly from attending the course. Today, the selection process for attendance is far superior because all who attend the AMORT Course have the opportunity to attend the test flight phase. That's not to say the course is any easier; it's as challenging as ever and in a short period of time the student is expected to learn and apply systems knowledge to detect, diagnose and alleviate certain malfunctions in the aircraft. Most importantly, they learn that there is no flight check that exceeds any aircraft limitation. Students should know why they are doing each check and assure that they perform a valid check. When the students complete this course and return to the field it should reduce the number of manhours required to diagnose and prescribe the appropriate maintenance procedure to alleviate a mechanical problem.

On a flow chart, those crazy wiring diagrams on office walls, you'd find that AMORTC is part of the Maintenance Management Division, which falls under the Department of Aviation Systems, a branch of the Directorate of Training of the Army Transportation School.

Maintenance test pilot instructor, Chief Warrant Officer Joseph A. De Cur
of a helicopter rotor blade tracking device to test pil



lot Training

Captain James B. Hanna has been a maintenance test pilot since 1968. For the past year, he's been the chief of maintenance management division.

"Maintenance test pilot training

Curtis (left) explains the operation
st pilot students

is the final phase of maintenance officer training," CPT Hanna explained. "Phases I and II of AMOR-TC take 12 weeks. We begin with publications, forms and records that are inherent to Army aviation maintenance. We teach a system that provides officers with good, reliable softskill knowledge that they need in order to be good maintenance officers."

After that groundwork is laid, the students get one step closer to the goal. In Phase II, aircraft systems are studied in detail. Hydraulic, electrical, control and numerous other systems are picked apart. Then their interaction and effects on one another are studied.

"Then we hit him with the test pilot course," CPT Hanna said.

But, what good is a maintenance test pilot? What, in fact, does that tongue-twister of a term even mean?

"Our mission is strictly mission functional. We teach a more sophisticated type of flying," CPT Hanna said. "The distinguishing feature between this and flight school is that this is maintenance oriented. When you perform maintenance on an aircraft—for example, you remove and replace the main rotor hub and blades—you've got to determine whether the aircraft is functional. That's the job of the maintenance test pilot. He flies the aircraft and certifies it airworthy before giving it to other aviators."

Whenever the term "test pilot" is heard, most people picture some daredevil flying at insane speeds, usually upside-down, doing incredible maneuvers, laughing hysterically and waving to a crowd of stunned spectators.

CPT Hanna is quick to punch holes in this theory. "That's a common misconception," he said of his field's reputation. "The people who do that are engineering test pilots for the firms who produce these aircraft. They determine the outer limits of safe speed, turn and bank limitations and that sort of thing. We never go beyond those limits in our test flying. We don't take an aircraft out and wring it out. We conduct system checks within the 'envelope' of that aircraft. The 'envelope' is the established, accepted limitations."

Maintenance test flights assure that an aircraft and its systems are performing as they are supposed to perform. Such a flight can be either a general or a limited test flight. The former is a check of the entire aircraft, the latter evaluates a certain part or system.

That is, if you repair only one part of the helicopter, say the drive shaft, you don't need to go through all the engine tests required for a general test flight. You can conduct a limited test flight which highlights the performance of the drive shaft and its related components.

Besides their contribution as test pilots, these officers have a larger goal, a more far-reaching responsibility to the "system" we call the Army.

"We want to do three things: to reduce downtime on aircraft; to reduce the number of spare parts in the system; and, to increase aircraft availability to the users," CPT Hanna asserted. "I say that because it wasn't too many years ago that we had almost an abundance of spare parts. Parts all over the place. Not only in aviation maintenance, but maintenance in general.

"But," he continued, "under these more austere times, we don't have the latitude to change, for instance, the main rotor hub and blades every time we get a little vibration. We can't afford it. So, we have a course such as this, where we preach troubleshooting and correction of problems. We feel this is a more professional approach to the field of aviation maintenance."

Maintenance test pilot training at Ft. Eustis is more than a little unique. Training here is the only one of its type throughout the Army and, says CPT Hanna, "If the other services have a course like this,

I'm not aware of it." Army, Air Force, Navy and Marine Corps pilots go through the program. Foreign students, as well, have benefitted from the training.

The first Navy student that anyone can remember is currently enrolled in the Huey track. He is Lieutenant (0-3) Paul Russell, of Helicopter Training Squadron 18, Naval Air Station, Whiting Field, FL.

"All the Navy's test pilots are locally trained," LT Russell said. "This training is better, though, because of standardization. You can pass on bum information from person to person for years. This course tries to stop that practice. The Army also has a much more thorough understanding of the UH-1 than does the Navy, so we can benefit from that.

"I'm also learning more about troubleshooting than I have in the past. The Navy doesn't require its pilots to know as much troubleshooting, but I can sure see its benefits. I think this course will be good for me, both as a pilot and as a maintenance officer. I'll also be able to share much of what I learn with my fellow Navy pilots."

You'd think that the person who's had 15 years of maintenance in the field would have a distinct advantage over the newbie pilot coming into this course. "Not so," says CPT Hanna.

"We have a wide diversity of student knowledge," the captain admitted. "But, surprisingly enough, by the time they leave here, they're almost equal. The experienced person has a tendency to pick up bad habits and shortcuts and the 'green' pilot has little knowledge of the aircraft at all. They finish up with pretty much equal skills."

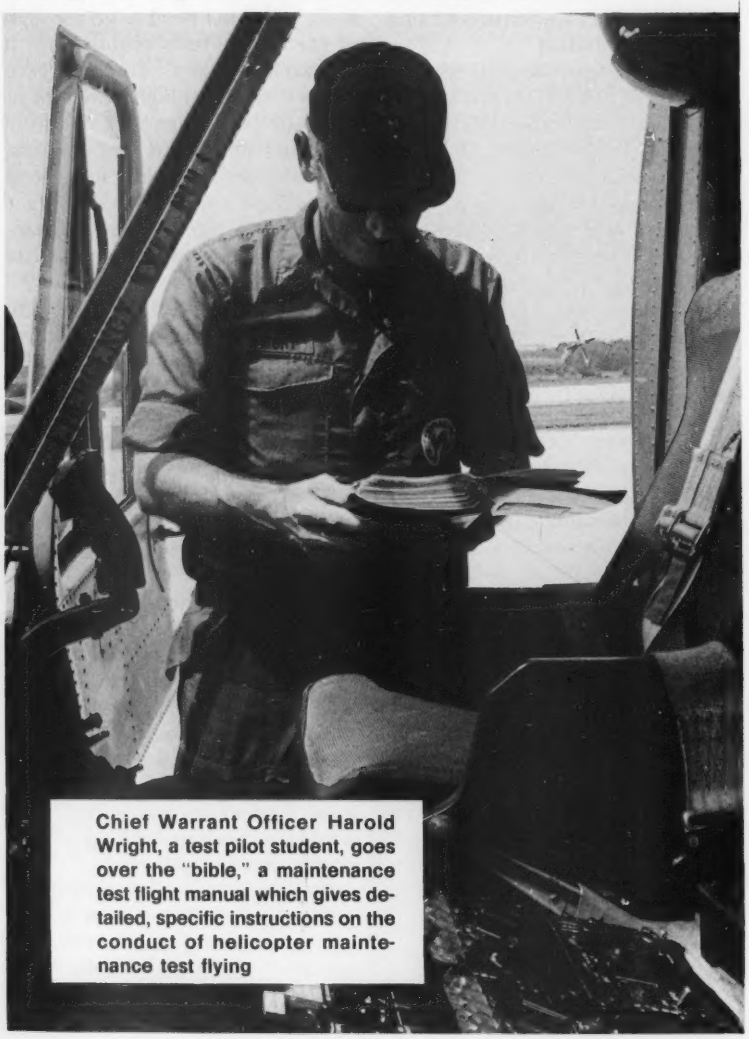
Classroom and cockpit instruction are split about equally. Half the time is spent in the classroom and the other half is in the cockpit or hangar, working with the extensive supply of superb training aids. The students fly in the mornings weather permitting, and spend afternoons learning details about what they'll do on the next day's flight.

There is a great deal of experience here from which the student can gain a lot of valuable information and not just from the instructor pilots. Some of the most experienced NCOs in Army aviation maintenance are here and their expertise adds immensely to the skills that a new test pilot must begin to develop.

Maintenance test pilot training is alive and well. As a matter of fact, it's still growing. Next year, during fiscal year 1979, 448 maintenance test pilots are scheduled to pass through the course. The majority of those, 216, will be graduated from the Huey track.

"As we receive new aircraft a new test pilot course is developed," said CPT Hanna. "For example, the UH-60 Black Hawk, our new helicopter, is going to have a test pilot course written around it. We have a warrant officer up at Sikorsky right now, gleaning information which will, about this time next year, be developed into a test pilot program for that aircraft.

"This is a very good course; this is a very, very challenging course. This is 'systems knowledge' of an aircraft," CPT Hanna concluded.



Chief Warrant Officer Harold Wright, a test pilot student, goes over the "bible," a maintenance test flight manual which gives detailed, specific instructions on the conduct of helicopter maintenance test flying

LTC Dan Keenan (Retired)
FAA Aviation Safety Inspector
Washington, DC

Stop Our "Good Buddy"

...Before He Destroys Us

THE CB CRAZE has been a joy to millions of Americans and listening on the open road can be funnier than popular radio shows. However, recently I have noticed that the CB jargon has entered some aviation communications. On one flight I heard a pilot tell a tower operator that he had been "stepped on." To the CBer it means that the tower operator's transmission had been blocked out because someone else transmitted at the same time. I've also heard the terms "10-4" and "What's your 10-20" being used instead of "Roger" and "Say your position."

The thing that makes the CB interesting, the variety of expressions, is the thing that will do the most harm in aviation communications. In aviation, it is not only important that the two persons conversing understand each other, but everyone monitoring the conversation must understand.

Don't get me wrong; the situation is not out of hand, but there are indications that it may get that way. All pilots like to consider themselves professionals and we should not allow the amateur language of the CBer to enter our airways. Positive corrective action should be taken immediately to "nip this in the bud."

The Federal Communications Commission (FCC) which is charged with the responsibility for radio communications, is unable to control the CB conversations on the ground. It would be foolish to expect that they can control the situation if it gets out of hand.

The Federal Aviation Administration (FAA) has the communicators and also the ability to control what is being said. They should establish directives to their 25,000 air traffic controllers to take corrective action everytime a CB phrase is used. If necessary, the FAA should incorporate into the many flight clinics an educational program to make the aviation public aware.

But in all reality that is asking the FAA to do a job that is bigger than they have the capacity to fulfill. The only solution is for the aviation public to police themselves. In every place where two of the aviation community gather, the user of CB language should be corrected.

The main place where you hear the CBer is on UNICOM (122.8). The operators of these stations generally know or will meet the user of the UNICOM frequency shortly after landing. This is the time to correct the abuser.

English is the international aviation language. It is folly to distort it any more than the many English-speaking countries do now. It will be fatal if everyone gets the word, but doesn't understand it!

Choose Your Weapons

CPT Alan J. Sariego
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WHILE DAWN breaks over the distant rise of the once familiar jungle canopy, aircrews for the day's combat mission routinely file into the red clay encrusted tactical operations center (TOC) bunker to receive their orders. During their briefing, I quietly survey the crews for the presence of mission essential equipment. Flight helmet, check; survival and ballistic vests, check; emergency radio and maps, check; individual weapons—*yuk!*

No one has the same kind of personal defense weapon. In the front row, I can see a .38 snub in shoulder harness, a sawed-off pump shotgun, a short stock M-79 grenade launcher, a stockless Thompson submachinegun, and something that resembles a silenced Swedish 9 millimeter (mm). Can't see into the second row but I suspect someone has a personalized .50 caliber. Continuing with the briefing, I begin forming a mental cartoon depicting one downed helicopter crewmember yelling to another to pass the ammo and receiving powder horn and ball for his .44 auto mag.

Dramatization? Yes—or was it? Either way, during our last military conflict, personnel from a variety of assignments could be seen equipped with personal defense weapons other than those authorized and provided by the Army. Were some armed more for ego and photograph rather than for protection? Possibly, but most, I believe were conscious of the hazards around them and believed the characteristics of their chosen weapons to be more suitable.

The two standard personal defense weapons currently in the Army inventory—and the two sometimes discriminated against—are the traditional .38 special revolver and the 65-year-old .45 automatic pistol. The .38 revolver is in the aviation unit tables of organization and equipment (TOE); the .45 automatic is in most ground unit TOEs. (See "Army's New Sidearm," November 1965; Views from Readers, March and April 1966; "Stay Alive With Your .45," April 1966; and "The 1911 Caliber .45 Reconsidered," page 30 of this issue, *Aviation Digest*.)

I surveyed 98 combat experienced, company grade officers in an attempt to identify specific dislikes of these two weapons as well as to characterize the optimum weapon: one that is most preferred by the users and one that meets the specific needs of both aviators and ground personnel.

The survey revealed the following data:

- Aviators were represented by 21 of the 98 officers surveyed. Their average age was 29.5 years with 8.5 years military service and 16 months combat service. Ground combat arms personnel composed the remaining 77 officers. Their average age was 28 years with 7.5 years service and 17 months combat service.
- Thirty-eight percent of both aviators and ground personnel had fired their handguns in combat. Of this group, 71 percent hit their targets which consisted primarily of enemy personnel. Only 3 percent of the scored hits were listed as animal.
- There was no distinguishable difference between left and right handed shooters' data.
- Ranges at which targets were engaged:

Meters	Aviator (Percent)	Ground Personnel (Percent)
1 to 5	0	15
6 to 25	29	38
26 to 50	57	35
51 to 75	0	4
75	14	8

- Of the ground personnel who missed their targets, 90 percent complained that the recoil of the .45 automatic made it difficult to resight on moving targets. Those who hit their targets were satisfied with the incapacitating effect of the round; however, most stated that it took between three and seven shots to

During our last conflict, were some armed more for ego and photograph rather than for protection?

Aviators prefer an easily operated lightweight revolver ... Ground personnel prefer a rugged automatic

score one hit. Most ground personnel favored the .45 automatic over the revolver for its hitting power, ease of loading and ruggedness.

• Most of the aviators preferred the .38 revolver over the automatic, primarily because the revolver can be fully operated single handedly; a potential necessity following a disabling crash. They also liked its dependability, its accuracy and its ease of operation. Those who scored hits with the .38 revolver were disappointed with its hitting power. One respondent stated that he hit his target (North Vietnamese soldier) three times before incapacitating him.

• The 10 weapons characteristics shown in figure 1 have been aligned in sequence to reflect each group's priorities for weapons consideration and selection. Some characteristics include additional information (i.e., 6 to 50 meters). This information represents a specific quantity desired by most respondents within each group.

Figure 1
Weapons Characteristics Priorities

Aviator	Ground Personnel
1. Stopping power	1. Stopping power
2. Effective range (26 to 50 meters)	2. Effective range (6 to 50 meters)
3. Ammunition capacity (6 to 7 rounds)	3. Ease of operation
4. Loaded weight	4. Field maintenance
5. Size	5. Ammunition capacity (8 to 10 rounds)
6. Ease of operation	6. Loaded weight
7. Recoil	7. Size
8. Field maintenance	8. Recoil
9. Noise	9. Ease of training
10. Ease of training	10. Noise

• The survey requested respondents indicate their preference for any handgun available either commercially or within the military inventory and their preferred caliber of ammunition. The results are shown in figure 2.

Let's summarize the characteristics desired by both the aviator and ground personnel groups, compare the results to existing weapons and then see if any one weapon can fill both bills.

Aviators prefer an easily operated, lightweight revolver with effective stopping power and accuracy within 26 to 50 meters range. They prefer the 9 mm cartridge and would like their weapon to hold a minimum of 6 to 7 rounds. They prefer the issued .38 special revolver over any other weapon currently in production.

Ground personnel prefer a rugged automatic, simply constructed for ease of operation and maintenance. They desire a weapon that has effective stopping power and accuracy with 6 to 50 meters range without the distracting recoil. They prefer a magazine with 8 to 10 rounds of 9 mm ammunition. Their choice of available weapons was the 9 mm Browning automatic.

The majority of aviators appear content with the .38 revolver. However, they desire more hitting power. A revolver chambered for the more powerful .38 super or magnum ammunition could do the trick.

The .45 automatic has a lot going for it and the ground pounder. Its knock down power, within the desired range, is satisfactory. It is simple to operate and maintain and it is darn near indestructible. Recoil, with its effect on accuracy, appears to be its major and terminal shortcoming. Based on the preceding user's preferences the 9 mm Browning automatic is a step out in front. It has nearly all of the .45's fine qualities but with 13 shots, less weight and less recoil.

Does one personal defense weapon satisfy the needs of both groups? Evidence does not say yes. Both groups are unique to their mission and have developed a sense for what is appropriate and suitable to the job. The aviator desires an easily operated revolver and the ground Soldier prefers a quickly reloadable automatic.

Have we characterized the optimum weapon? You be the judge. Choose your weapon!

Figure 2
Preference For Handgun And Caliber Of Ammunition

Choice of Weapon	Aviator (Percent)	Ground Personnel
.45 cal, 1911A1	0	9
.38 Special Revolver	55	26
9 mm Browning Highpower	27	40
9 mm P-38	0	9
9 mm Luger	9	3
.357 cal Revolver	9	7
Other	0	6

Choice of Ammunition (Caliber)	Combined (Percent)
.45	20
.357 magnum	17
.44 magnum	6
7.62 mm	3
9 mm	28
.22	1
.32	1
.38	24

The 1911 Caliber .45 Reconsidered

Captain Stanley A. Gregory
Department of Flight Training
U.S. Army Aviation Center
Fort Rucker, AL

HAVE YOU AS an Army aviator ever wondered why you are authorized to carry the caliber .38 Smith and Wesson revolver when your nonrated combat arms counterpart packs the venerable old M1911A1 ".45"? If you have ever fired the .45, you probably don't wonder about it at all. That ear-shattering, thumb-busting, bullet-gone-somewhere pistol was a real nemesis for just about anyone who fired it.

Annual qualification usually was a crippling affair. Standing on the firing line, you banged off seven rounds in the general direction of the silhouettes, then walked downrange and drove your thumb through quarter-inch plywood target material enough times to get a passing score. The introduction of the .38 (about 1965) ended all that; it was new, nice to look at and nobody else had one (see "Army's New Sidearm," November 1965; Views From Readers, March and April 1966; and "Stay Alive With Your .45," April 1966 *Aviation Digest*).

I was one of the first in line to turn in that claptrap .45 and get myself a real shooting iron. I was definitely first in line to turn it in after my first combat experience with the .38.

However, before I get into that, let's take a look at the two handguns and compare them statistically (see figure). The .38 chambers its round using the revolving cylinder concept; the .45 rechambers automatically using the receiver blowback design. Because this article is intended for readers familiar with both handguns, a detailed discussion of the operation of each has been omitted.

	Cal .38	Cal .45
Weight	21 ounces	48 ounces (loaded)
Muzzle Velocity	870 FPS*	830 FPS**
Max Effective Range	50 meters	50 meters
Kinetic Energy Lost (Foot-Pound)	77 ± 18	117 ± 6
Round Capacity (Max)	6	8

*158 grain lead round nose
**230 grain full metal jacketed

Item 4 of the figure, Kinetic Energy Lost, measures stopping power. The higher the number, the greater the potential for incapacitation. Tests were conducted at a range of 15 feet from muzzle to blocks of gelatin. Research in ballistic tests indicates that gelatin at 10 degrees Celsius and 15 centimeters thick (about 6 inches) could substitute for human tissue.

Prior to the introduction of the .38, the .45 was the standard military sidearm. It has been around since 1911 and is, therefore, time-proven. However, the .38 offered some new comforts; it was lighter, the recoil was less, it was easier to maintain and it seemed to overcome the .45's problem of accuracy. All in all it looked like a pretty good trade. But, how is it in combat? I could not locate any data of this nature; therefore, my own experience will have to suffice.

In early 1967 I was assigned to a helicopter assault company in the DaNang area. At that time the aviator sidearm was the .45, with a seven-round clip inserted. The eighth round, handloaded into the cham-

I was one of the first in line to turn in that claptrap .45...

ber, was prohibited for safety reasons. Later that year, I was to draw a .38 on hand receipt from a sister unit. A short time later, I had occasion to use this .38 on a simple little singleship mission to drop off a radio and come home. I was flying left seat in a UH-1D Huey and had just landed in a landing zone (LZ) about 35 miles southwest of DaNang. Enemy contact had been reported as light and sporadic. My crewchief had departed the aircraft to help unload the radio. About this time, I observed a Viet Cong trying to position himself with what appeared to be a rocket propelled grenade; he was about 75 meters from the aircraft and off to the left front. The crewchief still had his helmet on, but was unplugged. Fire from my .38 was the only thing that alerted those outside the aircraft to the potential danger. Five shots and I was all out!

As the pilot got the aircraft light on the skids and the crewchief reentered the aircraft, I attempted to reload my .38. Spent shells were dumped in my lap and as I attempted to thumb new shells into the cylinder, we departed the LZ. Of the six shells I attempted to load, two made it, two joined the spent shells in my lap, one dropped between the webbing in my seat and one was missing in action. Whatever parallels I drew between myself and John Wayne quickly were dissipated. However, that dissipation gave rise to this question, "Why did a handgun so difficult to load under stress replace a handgun that was easy to load under any conditions?"

Determining why the .38 replaced the .45 produced the following primary considerations:

- The .38 is lighter.
- It has less recoil.
- It is easier to maintain.
- The availability of ammunition is better.
- During firing, shells are not ejected into the cockpit.

Before discussing how these merits stack up against the .45, let's put the use of these handguns into perspective. Their most basic function lies in survival and personal defense. I have never used either for survival, so I'll restrict my discussion to defense, particularly aviator defense. Given the choice to either Duke it out at 50 meters with a pistol/revolver or pull pitch and fly out of danger, the rational aviator will opt for the latter, therefore negating the use of the handgun. It's the "no alternative" situation that we must weigh against the merits of each handgun.

There is no argument that the .38 is lighter than the .45, but is that difference significant in light of a life or death situation?

Theoretically, the less the recoil, the less the flinching on the part of the firer and this is true to some extent. However, the recoil from the .38 is considerable and only the most experienced handgunner is not affected by its kick.

The muzzle velocities differ by 40 feet per second; however, the greater speed of the .38 is offset by the heavier bullet of the .45 when related to stopping power (Kinetic Energy Lost).

The maximum effective range of each is equal. The .45 has considerably more stopping power, 117 ± 6 foot pounds lost, as opposed to the .38's 77 ± 18 foot pounds lost. It should be noted that it is not the total amount of kinetic energy that a bullet loses in tissue that is of importance; rather, it is the energy delivered to the thoracic and abdominal organs that causes incapacitation. If you can't hit what you are shooting at, neither handgun is any good.

The .45 can load a maximum of eight rounds and the .38 a maximum of six. However, the standard loading configuration is seven rounds in the .45 and five in the .38. Obviously, the .45 has a two-round advantage.

The .38 supposedly does not eject spent shells into the cockpit and that is correct; the firer does, five at a time. The .45, however, does eject spent shells into the cockpit, one at a time. In either case, what is the difference? Keep in mind that this is a "crunch" situation and if the aircraft could fly, I would not be discussing the issue.

The availability of ammunition supposedly favors the .38. But where? The 9 millimeter Mauser and parabellum are predominate in Europe and they are not interchangeable with the Model 15 .38 issued to aviators. Excluding the United States, I see the two handguns about equal on this point.

Hopefully, I have described a realistic situation necessitating the use of a handgun in personal defense. When you are down to a handgun for personal defense, things are really tight. It was this type of situation in which I have attempted to evaluate the advantages of each handgun. That and my own experience have led me to believe that perhaps we should take a serious look back at the .45 as a sidearm for the Army aviator.

...perhaps we should take a serious look back at the .45 as a sidearm for the Army aviator

Reporting Final

Late News From Army Aviation Activities

FROM FORT RUCKER

Change Of Command. Major General James C. Smith will turn over command of the U.S. Army Aviation Center, Ft. Rucker, AL, to Major General James H. Merryman this December. MG Smith, who has served as Ft. Rucker's commander since 19 July 1976, will become Director of Training in the office of the Deputy Chief of Staff for Operations, Department of the Army, Washington, DC. MG Merryman has been serving as Deputy Chief of Staff for Combat Developments at the Training and Doctrine Command (TRADOC), Ft. Monroe, VA. **(AVIATION DIGEST)**

☆ ☆ ☆

Doss Aviation Wins Prestegious National Award. Doss Aviation's Primary Flight Division, at Hanchey Army Heliport, Ft. Rucker, AL, has won the Army's most coveted aviation safety award—the Daedalian Army Aviation Flight Safety Award. It is the first time a civilian flight training contractor at the U.S. Army Aviation Center has won the great silver trophy. Doss did not have an accident or incident during the 9-month period, 1 Oct 1977 through 30 Jun 1978, while completing the initial training of nearly 800 student aviators. This involved more than 38,000 flight hours.

Plans for officially awarding the trophy include formal presentation of the award by the Daedalian Society at the Ft. Rucker Officer's Open Mess this month. The Daedalian Foundation is a charitable nonpolitical, nonprofit organization formed in 1934 by a small group of World War I aviators. The mission of the Order is to promote safety and to preserve the aviation traditions established during World War I. **(DOSS AVIATION)**

☆ ☆ ☆

FROM THE PENTAGON

Aviation Training. Effective 1 October 1978, DA staff responsibility for training was consolidated under the Deputy Chief of Staff for Operations and Plans (DCSOPS). Heretofore, individual training proponency was vested within ODCSPER. Now all training, individual and unit, has been merged and an ODCSOPS Training Directorate has been formed. Individual aviator training, both graduate and undergraduate, and aviation related training within the appropriate enlisted career management fields will be monitored within this new directorate. LTC Jim Lloyd, assigned to the Individual Training Division (DAMO-TRI, AV 225-4061/6818) is the primary action officer for individual aviator training. **(ODCSOPS)**

☆ ☆ ☆

Automated Flight Records - The Army recently contracted with a civilian firm to conduct a feasibility study for the automation of the aviator flight record system. The study will generate a model for an automated flight record system that provides timely and accurate flight data without introducing an administrative and clerical overload on aviation field units. An identification will be made of data that can be given to Army managers and analysts to assist them in decisionmaking. Additionally, a means to integrate flight record data with that from other management information systems will be developed. **(ODCSOPS)**

☆ ☆ ☆

Helicopter Anti-Icing/Deicing. Interest in helicopter anti-icing/deicing is growing in the U.S. and NATO. During January-March 1979, the partial ice protection kit (Kit A) for the UH-1H will be flight tested for certification. Kit A product improvement (PIP) includes a heated windshield, an ice detector, and repositioning the FM antenna. The Federal Aviation Administration (FAA) and U.S. Army Aviation Research and Development Command (AVRADCOM) have executed an interagency agreement expanding the scope of UH-1 icing flight/Kit A flight certification testing to provide data to FAA for its use in certification of ice protection systems for civil use. In July 1978, the National Aeronautics and Space Administration (NASA) hosted an icing specialists workshop at NASA Lewis. U.S. and foreign attendees represented civilian industry and a number of government agencies. Military attendees represented USAAVNC, TRADOC, AVRADCOM, HQDA, USAG, USCG, and the Royal Navy.

The workshop was organized into six committees: Meteorological Research, Icing Forecasting, Systems Development, Icing Research and Facilities, Civil Operations, and Military Operations. The objective of the Military Operations Committee was "to define the operational environment of various military aircraft with a view toward identifying ice protection systems (complete or partial) required to ensure mission accomplishment." The committee highlighted the policy of "NATO first" by defining the operational environment as central Europe and the North Sea. The key helicopter missions of antitank, search and rescue, and antisubmarine warfare resulted in Army-Air Force operational

parameters of surface to 500 feet AGL (wartime) and surface to 10,000 feet (peacetime)—and Navy operational parameters of sea level to 10,000 feet (both war and peace). As a result of the workshop NASA is establishing an icing research group at the NASA Lewis Center. NATO interest in helicopter icing is expressed through AC/225 (Panel X) and its Subgroup on Helicopter Icing will conduct a symposium on 6 and 7 November in London. The UH-60 Black Hawk and AH-64 Advanced Attack Helicopter will have ice protection systems which include rotor blade deicing capable of operating in moderate ice. The Advanced Scout Helicopter (ASH) requirements include similar provisions. **(ODCSRDA)**

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Worldwide Aviation Logistics Conference (WALC) - The Worldwide Aviation Logistics Conference (WALC) is held annually at Headquarters, U.S. Army Troop Support and Aviation Materiel Readiness Command (TSARCOM) in St. Louis. The objective of the WALC is twofold: (1) review/establish production and depot maintenance programs to develop distribution schedules for aircraft, avionics, armament subsystems, Ground Support Equipment (GSE), and aircraft survivability and life support equipment; and (2) address the aviation logistics problems of participating commands. Attendees at the WALC include representatives from HQDA, DARCOM, TSARCOM, and all major commands with relatively large inventories of aircraft. In preparation for the WALC, TSARCOM prepares a draft of distribution schedules and depot maintenance programs for a 2-year period. These schedules/programs are coordinated with DA, reviewed by all commands and finalized during the conference. Organized into working groups by weapons system, representatives of the participating commands review and update the approved current fiscal year programs and develop plans for the next fiscal year programs.

Programs developed by the work groups then are evaluated/reviewed by a Senior Officer Review Board composed of senior members from each participating command and chaired by Mr. Joseph P. Cribbins, Special Assistant to the Deputy Chief of Staff for Logistics (DCSLOG), HQDA. Following the Senior Officer Review Board, program summaries are presented by work group chairmen to a General Officer Review Board for approval. From the time working group deliberations commence until the General Officer Review Board concludes its proceedings, a period of five days normally elapses. Distribution schedules and maintenance programs approved by the WALC are for immediate planning purposes and tentative implementation. Official approval is announced through publication of a Department of the Army message. The next annual WALC is tentatively scheduled for May 1979. **(ODCSLOG)**

☆ ☆ ☆

Aviation Requirements - Overall HQDA proponency for Army aviation is one of the functions of the Requirements Directorate, ODCSOPS. Brigadier General Carl H. McNair, Jr., as Deputy for Requirements and Army Aviation Officer, is the DA Staff focal point for aviation and serves as the principal advisor to the Secretary of the Army, Chief of Staff, United States Army, and Army Staff on aviation matters. To assist BG McNair in meeting his aviation responsibilities, he is provided an Army aviation team within the Directorate's Combat Division (COL Bobby J. Maddox, Division Chief). This team is composed of Force Integration Staff Officers (FISOs) who monitor aviation requirements in a number of areas. The team members, who are available to assist you in any way possible (AUTOVON 227-9666), are:

LTC Bob Wagg - Team Supervisor and Special Projects

LTC John Boysen - Utility Helicopters and Special Projects

LTC Bob Fairweather - Scout/Observation Helicopters, ASE, LSE, GSE, RSI, and Helicopter Commonality

LTC Ed Lethcoe - Flying Hour Program, Aircrew Training Manuals, Speciality 15, and IRR Augmentation

LTC Bob Shain - Aviation Regulations, Flight Standardization, Flight Simulators, Aviation Facilities, and ATC/FAA

LTC Jim Thompson - Aviation Force Structure, Medium and Heavy Helicopters, WALC, Aircraft Distribution, TDA Consolidation, and Fixed Wing Aircraft

MAJ Steve Ballard - Avionics and Night Vision Program

Two additional members are assigned to the Attack Helicopter Operations and Analysis Group (AHOAG), located at Fort McNair (AUTOVON 223-0078). They are:

LTC Dave Funk - Aviation Studies, to include ATHELO, Air/Ground Cavalry and TASVAL

MAJ(P) Gary Ramage - Attack Helicopters, Weapons Systems, and Ammunition

(ODCSOPS)

OPMS CORNER Officer Personnel Management System

Long Term Commissioned Aviator Career Policy

LTC George A. Morgan
Chief, Aviation Management Branch
Officer Personnel Management Directorate
U.S. Army Military Personnel Center

TO MEET THE Army's requirements during the Vietnam era, we trained a large number of commissioned officers to be aviators. For example, in 1970 we trained in excess of 2,000 commissioned officers. In 1973, as we began to withdraw from Vietnam and a reduction in the force structure was required, we ended up in a position where we had more commissioned aviators than we needed.

Since that time, low training rates have been the rule. We reached our low point last year when we trained only 162 commissioned aviators. During the 1970s our company grade aviator force has been characterized by a dense population in the 1966 to 1970 year groups. As officers in these year groups have departed the Army or have been promoted to the field grade level, we have each year ended up with a diminishing company grade population and naturally an increase in the number of field grade aviators.

Flight training continues to be very expensive. It costs about $100,000 to train an aviator. Since 1973 the Army has trained less than what was required to meet company grade requirements. It is now acknowledged that to support the approved aviation structure there is a need to train more young aviators. We have not in the past few years trained sufficient lieutenants and captains. Therefore, our company grade force commencing in 1979 and for a few years following will be short handed.

Since the Vietnam era the employment of Army aviation has been integrated into the combined arms team. Combat aviation units are now employed under doctrine similar to that of other combat arms maneuver units. With this new tactical development we must focus on the role of the commissioned officer and we must ask a basic question—Does the officer still need the traditional education, training and combat arms experience of the past? The Chief of Staff of the Army (CSA) is involved personally in these deliberations and has made the following observations:

When discussing the role or mission of commissioned aviators, primary consideration must be given to their career development pattern. How are they developed? Should they attend traditional branch related schools, or, with the development of new and/or sophisticated aircraft, should there be some changes? Are combat arms assignments necessary to develop an appreciation of ground combat?

Let's talk about that right now.

Beginning in fiscal year (FY) 1979 we will be unable to fully meet the company grade aviator requirements. Even with Department of Defense and the Congress' cooperation in increasing the training rate the shortage will continue for several years. During this period company grade aviators must spend their time in aviation related jobs. Additionally, in FY 1979 it is anticipated that about 150 majors will be assigned to aviation positions in the Continental United States currently held by company grade officers.

Also during this time we will no longer be able to afford the extensive periods of entry specialty training prior to attendance at flight school. The Army's past policy in regard to commissioned aviator training has been to send the majority of officers between their 24th and 60th month of active service.

Therefore, commencing early in 1979, the Army will begin accepting lieutenants into flight training upon completion of the officer's basic course. This does not mean that we stop other officers with more active service from attendance. The Delayed Entry Program for those officers having up to 60 months of active duty will continue but will be phased down proportionally during

the next several years.

Complete implementing procedures on this change in policy will be announced by Military Personnel Center in the very near future.

The ongoing studies that will impact on our aviators include:

- The pilot/seat ratio required to fly our aircraft in peacetime as well as in combat environments.
- A complete review of our aviation force grade structure to determine if we have the right balance.
- A review of aviation positions to determine if we have them properly coded, and to determine those nonoperational positions requiring aviators, particularly at the field grades.

The issues surrounding Army aviation and the long term development of commissioned officers as aviators have been under scrutiny for sometime. The CSA has been provided an inprogress review of the efforts to date. Further analysis is needed and a final report will be provided for his decision next month.

1978 ATC AWARDS

THE U.S. ARMY Air Traffic Controller of the Year is SSG Elliot E. Monroe, 14th Aviation Unit (ATC), Germany, who is assigned as Facility Chief, Heidelberg Ground Control Approach (GCA) Facility. Since his assignment as facility chief, SSG Monroe has revised the noise abatement procedures; established new routes for overflight of densely populated areas; and instituted a program using military controllers to monitor standard instrument departures at a substantial savings to the command. SSG Monroe completely revised the training program to include rewriting the Facility Training Manual and updating Letters of Agreement and Operations Letters. He was responsible for redesigning and modernizing the interior of the GCA facility to provide more working and storage space, and a comfortable working environment. Sergeant Monroe will be the Army's nominee for the Air Traffic Control Association's (ATCA) George W. Kriske memorial award.

SP6 Robert H. Stanfield, Coleman Detachment, 14th Avn Unit (ATC), is the ATC Maintenance Specialist of the Year. Specialist Stanfield also is the first ATC Maintenance Specialist selected by the U.S. Army. Specialist Stanfield has onsite maintenance supervisor responsibility at Coleman AAF and Landstuhl Army Heliport. During the year, Coleman AAF radios and NAVAIDS were operational more than 99 percent of the time, and the radar was operational 93 percent of the time. Under Specialist Stanfield's supervision, a tactical control tower (AN/TSW-7A) was set up to allow installation of new equipment at the fixed facility. He established a maintenance support agreement for the radios. Throughout the upgrade, this equipment was maintained 100 percent operational. The most commendable feat during the upgrade was the relocation of the radar indicator from the side of the runway to the new facility at the base of the control tower and hook up in one day. Only 9 hours downtime was incurred; an accomplishment unparalleled in Europe. Specialist Stanfield is the Army's nominee for the Air Traffic Control Association (ATCA) Special Medallion Award.

The U.S. Army ATC Facility of the Year is Campbell Tower, USACC-Detachment, Ft. Campbell, KY, Traffic at Campbell Tower, one of the Army's busiest with a count of 206,329, includes Air Force C-5s, civilian DC-8s and 9s, Navy A-4s and 7s, and Army UH-1s and OH-58s. In June 1977, 434 UH-1s, a squadron of F-4s and several C-130s were based at Campbell Army Airfield conducting daily operations. Campbell Tower has operated at saturation several times during the past year; the most notable occasions were Reforger 77 and Bigot Neptune II. The traffic situation at Campbell Army Airfield is unique and complex. Unlike the majority of Army airfields, Campbell Tower must channel and mix a variety of fixed wing aircraft to one runway, helicopters to two parallel pads, and a rotary wing runway within the traffic pattern boundary, using only the north side of the airfield for traffic patterns. During the last year Campbell Tower controlled 170 emergencies resulting in 12 recognized saves.

Directorate of Evaluation/Standardization

REPORT TO THE FIELD

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362; or call us at AUTOVON 558-3617 or commercial 205—255-3617. After duty hours call AUTOVON 558-6487 or commercial 205—255-6487 and leave a message

The DA Aviation Standardization Policy Board—What Is It?

AS YOU ARE reading this article, the Department of the Army (DA) Aviation Standardization Policy Board is in session. Some of you will ask: What is it? What does it do? Who's on it?

To answer your first question, "What is it?" It is the granddaddy of the Army Aviation Standardization Program; it is the end of the line for those problems which arose at the unit level and were unresolved through the aviation standardization hierarchy. It meets once annually, usually in the fall of the year. Its agenda is based on problems that have surfaced within the aviation community.

The second question, "What does it do?" It establishes general policies and procedures for the aviation community. It reviews activities of subordinate boards.

Third—who makes up this all-powerful board that judges on Army aviation standardization? The board is chaired by Deputy Chief of Staff for Operations and Plans (DCSOPS), LTG Edward C. Meyer. The executive chairman is BG Carl H. McNair Jr. (Deputy Director, Requirements, DA DCSOPS), the DA Aviation Officer. Representatives from the following agencies and commands compose the board:

- DA DCSOPS
- DA Deputy Chief of Staff for Personnel
- DA Deputy Chief of Staff for Logistics
- The Inspector General (U.S. Army Agency for Aviation Safety)
- Deputy Chief of Staff for Research, Development and Acquisition
- The Surgeon General
- Chief, National Guard Bureau
- Chief, Army Reserve
- Military Personnel Center
- U.S. Army, Europe
- U.S. Army, Japan
- Eighth U.S. Army
- U.S. Army Materiel Development and Readiness Command
- U.S. Army Communication Command (U.S. Army Aeronautical Services Office)
- U.S. Army Training and Doctrine Command
- U.S. Army Forces Command
- U.S. Army Military District of Washington

The Standardization Policy Board also covers aircraft logistics, aircrewmember pay, manpower and anything that impacts on Army aviation

- U.S. Army Aviation Center
- U.S. Army Intelligence Command

The composition is impressive and includes every command within the Department of the Army.

We now have told you what they are and what they do and who the game players are. How does this board affect you the aviator and how can you the aviator affect the board?

Let's take a situation that you as the aviator are dissatisfied with and feel should be changed for the good of Army aviation. You don't like standard autorotations! Obviously, you have given much thought as to why "standard autorotations," should be removed from the aircrew training manual program, annual standardization ride, aircraft qualification, etc.

Your next move is through your unit or installation aviation standardization board to express your views and rationale on the question. The installation standardization board, as a body, may or may not agree with you on this subject; however, they do not have decisionmaking authority to either approve or disapprove your request for elimination of this maneuver. What happens then?

The installation standardization board elevates the question to the next level in the standardization chain, that being the numbered armies in the Continental United States (CONUSA) or major command (MACOM) standardization board. At the annual meeting of this aviation standardization board, your question will receive wider visibility and those views and rationale of other installations are considered in order to arrive at a position of this aviation standardization board. However, since this is an Armywide question, the CONUSA or MACOM standardization board is not empowered to make a decision for Armywide application. What happens to the question now?

If this board agrees with the positions which have been presented to them, they funnel the question up to the next level in our aviation standardization board hierarchy, that being the Department of the Army Aviation Standardization Policy Board. Now, your question is subjected to Armywide scrutiny on its merits as it applies to the total force. This body has decisionmaking authority. The question is discussed pro-and-con and is taken before the total board for a vote of "yea" or "nay." The yea's win, the nay's lose. The board forwards the recommendation to the Chief of Staff, Army for approval and tasking for Armywide adoption.

The DA Policy Board is your tool or vehicle to express your views and to have these views impact on the total aviation force. Many think of the aviation standardization program in a very small entity, generally, only those issues that evolve within the local structure. However, your views would be and can be elevated to the highest level.

The foregoing is only an example of how your problems can be heard and acted upon. The Aviation Standardization Policy Board does not only undertake standardization questions but also it covers areas such as aircraft logistics, aircrewmember pay, manpower and anything that impacts on Army aviation. The system is there, it can be used; it should be used; and if not used, the responsibility is yours.

The results of the 1977 Policy Board meeting have been published in the February 1978 issue of the *Aviation Digest,* page 6. See headline below.

PEARL'S

Personal Equipment & Rescue/Survival Lowdown

If you have a question about personal equipment or rescue/survival gear, write Pearl, DARCOM, ATTN: DRCPO-ALSE, POB 209, St. Louis, MO 63166

Letter To Pearl

23 August 1978

Pearl:

I am the new ALSE evaluator/instructor, working with the USAREUR Safety and Standardization Board (SSB). Due to the increasing concern for a complete and viable ALSE program, and armed with factual information provided by the previous evaluator, the aviation staff is aggressively attacking this problem area. A portion of the solution was to provide a full-time position on the SSB for an ALSE specialist to provide assistance and further evaluation in the ALSE field.

I now fill that position on the SSB. My experience includes several years working Army ALSE at the unit level and working with the Air Force and Coast Guard. Also, I was fortunate to attend a 6-week formal ALSE school. I feel the problems concerning ALSE are many. However, with the ALSE personnel in the units working together, we can formulate a viable ALSE program that assists the commanders and the aviation crews.

David P. Klindt
CW2, USA
ALSE Officer

CW2 Klindt, you can be considered as an Army first, having as your primary job, aviation life support equipment. I hope this will set a precedent and that there will be an ALSE specialist assigned to every aviation unit in the Army. The "ball" is finally rolling in this critical area.

PEARL

$E = 1/2\ MV^2$

For those of you who are a little rusty at your formulas, $E = 1/2\ MV^2$ means, energy equals one-half the mass times the velocity squared, or in other words, a couple of pounds of feathers can tear hell out of an airplane.

Tests have determined that a 3-pound bird, hitting your windscreen at 420 knots has about 23,000 pounds of kinetic energy to dissipate. Of course, most Army aircraft do not fly this fast, but the slower you fly in a known bird or migratory fowl route, the better. Bird strikes are more probable at lower altitudes.

If birds are reported to be around the airport you intend to use, fly a straight-in approach if you are able. Experiments have proven that birds can see and hear well, and they rely on these senses to warn of danger. Evidence also exists, however, that birds cannot predict an airplane's flight path if it is not in a straight line. Turn early to avoid birds, if able. Last ditch maneuvers usually don't work.

$E = 1/2\ MV^2$, also could mean to always fly with your SPH-4 flight helmet visor down. The visor is designed to save your eyes. Believe me, if you are trying to duck a goose, you won't have time to reach up and lower your visor.

ALSE In AMDF?

The Army Master Data File (AMDF) normally lists all items of equipment used by the Army. However, the Army uses many items of aviation life support equipment (ALSE) that is managed by the Air Force and Navy. Some of these items of ALSE may not be listed in the Army AMDF.

Because the item of ALSE is not listed in the AMDF, this does not mean that you cannot get it, or that the equipment is not available. It simply means that you must hand process your requisition "off-line" to the Air Force or Navy managing activity of the equipment.

Many Air Force items of ALSE have the letters "LS" on the end of the national stock number (NSN). When buying from the Air Force and "LS" is listed at the end of the NSN be sure and list it, even though the Army supply system does not recognize the "LS." The Air Force supply system will not recognize the NSN without the "LS."

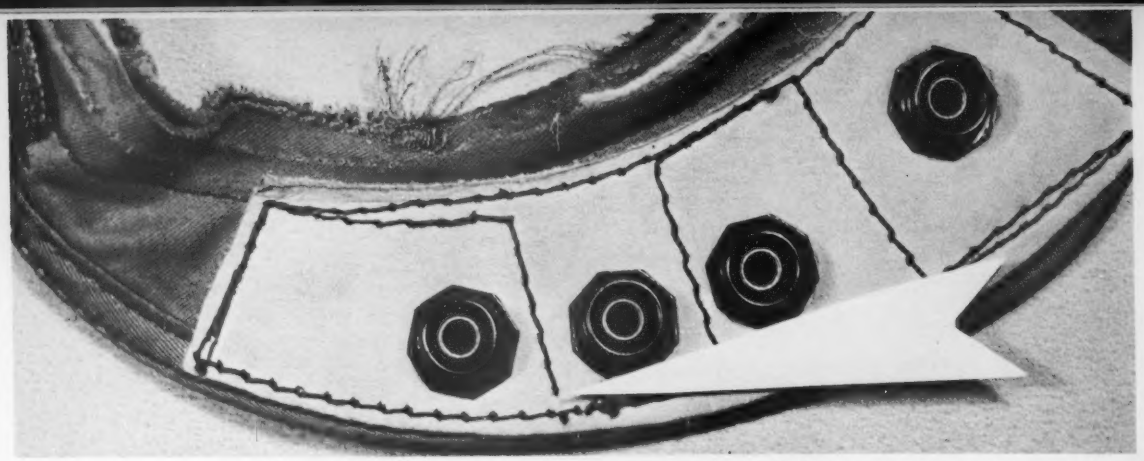
If you have a question regarding ALSE that is not listed in the AMDF, write to PEARL or call us on AUTOVON 698-3241 or 698-3291.

PDO It

What do you do with dead mercury batteries that will no longer operate as designed? Mercury batteries are much better than the old carbon batteries that most of us are familiar with, such as those used in ordinary flashlights. We use mercury batteries in our strobe lights and survival radios because they are much better batteries.

However, mercury is an environmental contaminant. It is also a valuable element that can be recov-

Regina Rostek
Photo by L. B. Epstein



Front side of earcup retention assembly (bad helmet)

Figure 1

ered and recycled. Therefore, it should not be disposed of indiscriminately.

Mercury also is poisonous. Mercury batteries should be handled very carefully, especially if leaking, or a white powder appears. If you have any cuts on your hands you should be especially careful when handling leaky mercury batteries. Your hands should be thoroughly washed after handling mercury batteries.

Now, what do you do with the dead batteries? SB 11-30, Dry Battery Management Data, page 8, paragraph 12c advises you to turn in all mercury batteries to your property disposal office (PDO) for disposal. The paragraph reads as follows:

Dry batteries nomenclatured in the BA1000-1999 series contain mercury which is salvable. Unserviceable dry batteries in this category will be turned in to the property disposal office (PDO) for reclamation. Disposition of these batteries by the PDO will be in accordance with the current issue of Defense Scrap Yard Handbook, DSAH 4160.1.

Grimy Gloves

Dirty, greasy, grimy Nomex flight gloves won't make any difference when flying your aircraft but they could make a difference in an aircraft fire. Clean gloves will not burn as easily as those that are dirty with oil and grease.

Your gloves can and should be cleaned and maintained the same as other articles of Nomex flight clothing. Wash your gloves in mild soap and warm water. The water should not be warmer than 120 degrees Fahrenheit. Rinse and stretch the gloves into shape. Drip dry or wring in a towel. Do not wring or twist dry. Also, they should not be exposed to heat or sunlight during the drying process.

If you find the leather palm of the gloves to be a little stiff after drying, an application of saddle soap will restore them like new.

Return To Me II

In our PEARL article of the October 1978 issue of the ***Aviation Digest*** we asked you to return all SPH-4 flight helmets manufactured under contract number DSA 100-72-C-0143. Well, this was good information as long as you had a nameplate in your helmet that you could read. But what about helmets without nameplates? How were you to identify those helmets?

The pictures in figures 1 and 2 should help you identify the bad helmets. These are pictures of the earcup retention assembly of the SPH-4 flight helmets, produced under the above contract number. You will note that the four snap buttons on figure 1 *do not* extend through the back side of the cloth as shown in figure 2, i.e., good helmets produced under other contracts will have the four snap fastener buttons appear on the back side of the cloth. These buttons also will be covered with fabric material but they will be visible.

Figure 2

Back side of the same assembly (bad helmet)

THE THREAT

Mi-8

Soviet TICAL airlift is a ion responsibility. The troop transport as in Military Transport he contributions of to combined operations been strengthened by development of helicopters using improved airborne combat equipment. port helicopters. Included being a Military Transport asset, one such helicopter, deployed in Soviet units as well, is the powered by two 1,500 turbine engines, replacing the older IND, has a maximum 250 kilometers per kilometer operations and a 4,500 meter operating. Typically carrying a crew of two passengers or 4 tons otherwise equipped with strap-on antitank guided missile, 57 millimeter rocket, and gun armament still can possess a limited troop-carrying capability.

Generally, Soviet troop and cargo aircraft are employed in the following type operations:

- Airborne
- Air assault
- Airlift of high priority weapons and equipment
- Logistic support of deployed tactical units
- Movement of troops from rear to forward areas
- Medical evacuation
- Concurrent battlefield reconnaissance

In the air assault role, the HIP, in conjunction with other Soviet helicopters, is employed to ensure high tempos of the offensive. Representative air assault missions include:

- Seizing and holding important sectors, river crossing points or attaining possession of areas within the depths of the enemy's defense until the arrival of advancing troops.
- Seizing and holding important objectives along the route of enemy withdrawal.
- Destroying control points, radar posts and signal centers.
- Forcing premature deployment of enemy forces in a meeting engagement prior to arrival of the main forces.
- Preventing the enemy from closing gaps formed as a result of nuclear strikes.

Usually, motorized rifle battalions are used as tactical helborne landing forces. In sectors against which nuclear weapons have been employed, the Soviets believe that it is advantageous to carry out such helborne operations as soon as possible after the nuclear strike occurs.

OH-58
USAAAVS
Tolly

Tail Rotor Stall

This article, previously published by USAAAVS in the DIGEST under the title "How to Crash—By The Book," is being reprinted because of a recent visit by an OH-58 pilot who credits it with possibly saving his life. The pilot had a tail rotor stall, remembered and applied what he had read in the article, and got his helicopter down safely.

NOT TOO MANY years ago—before the advent of the recovery room—the expression "The operation was a success . . . but the patient died," was common, and unfortunately, true. All too often the surgeon's best efforts were negated by some complication that developed while the patient was left unattended. Today, we could properly coin a somewhat similar saying in Army aviation, and it might be worded something like this: "The flight was planned and conducted by the book . . . but the aircraft crashed."

Here, again, the cause can be properly attributed to some form of inattention; yet this type of situation is not an isolated one. Several OH-58 pilots have been involved in remarkably similar accidents in which loss of tail rotor control preceded each mishap. Further, in each instance, investigators found no evidence of maintenance error or materiel failure. Nor did they find any single aircraft limitation such as gross weight, CG, altitude, airspeed, etc., had been exceeded. Technically speaking, each flight had been properly planned and conducted in accordance with correct procedures. Nevertheless, in each instance, the tail rotor failed to respond to pedal input, and the resulting loss of control led to an accident.

Let's look at one of these mishaps through the eyes of the pilot. Here is what he had to say: "I changed my frequency (FM) to that of the unit that I was supporting and turned around to ensure that my passengers were properly strapped in, doors secure, and belts inside the aircraft. I visually ensured this and was also given a thumbs-up from the back seat personnel.

"At approximately 1030 I performed my pretakeoff check. All instruments were normal, hover was normal, and I made my takeoff southwest into the wind. I was given directions to proceed southerly to a ground troop objective area. The object of the mission was to make radio contact, spot and observe the progress of some ground troops.

"I proceeded southerly . . . and made a left-hand turn over the objective area. It was one complete 360-degree orbit plus 180 degrees, rolling out on a northerly heading. I traveled several thousand meters north and made a right-hand turn . . . .

"I traveled southerly for approximately 1,000 meters and entered a right-hand turn to a northerly direction. I traveled approximately 1,000 meters northerly and initiated a right-hand turn to a southerly direction. The aircraft fuselage continued to turn right. I applied left cyclic and removed right pedal input in order to straighten the aircraft out on a southerly heading. It was at this time that the aircraft first failed to respond to control input. As I entered the turn, all instruments were normal . . . and airspeed was approximately 50 knots. As I tried to pull out of the turn, the nose of the aircraft continued right and the aircraft was crabbing badly and continued to turn right. It would not respond to left pedal pressure. As it continued to turn, I could feel the tail lift up as it passed through a southerly direction (downwind) . . . .

"Sometime during this period, I saw the airspeed at 40 knots. The aircraft continued to rotate to the right with increasing velocity, going from a somewhat elliptical pattern into a pattern of the fuselage rotating around the mast. The rotation was violent and completely uncontrollable, and gave the feeling the aircraft would come apart.

"During this time, the aircraft was picking up an increased rate of descent. During one of the rotations, when it became apparent that recovery would not be possible, I split the needles and reduced collective to full down. The aircraft continued to rotate at least 270 degrees to the right. I was unable to adjust the aircraft attitude so as to choose the point of landing (impact). I realized I would hit the trees. I leveled the aircraft and, just above the trees, I applied all available collective pitch to slow my rate of descent, and made a Mayday call.

"As I hit the trees, the nose of the aircraft pitched down as the tail made initial contact. . . . The aircraft came to rest on the lower chin bubble portion of the

Several OH-58 pilots have been involved in remarkably similar accidents in which loss of tail rotor control preceded each mishap

fuselage, with the tail in the air...."

Now, for a more complete picture, let's fill in the gaps with information from the accident report.

To begin with, the pilot was to have picked up only one passenger before conducting the reconnaissance flight. However, a last-minute change resulted in three passengers boarding the aircraft. This increased the gross weight of the aircraft to more than 2,600 pounds.

When the aircraft arrived over the area to be reconned, the pilot flew a racetrack pattern approximately 1,500 meters long and 400 meters wide at an altitude that varied from 150 feet to 250 feet agl and at an indicated airspeed that fluctuated from 40 to 70 knots. The density altitude was approximately 3,100 feet. In making his turns, the angle of bank was determined to have approached 30 degrees.

While in a right downwind turn, the pilot noted loss of tail rotor control, and the aircraft continued to turn right in a nose-low attitude. The pilot applied left pedal and left cyclic, but the aircraft did not respond to control input. Instead, it began to spin in a clockwise direction, remaining in a nose-low attitude as it continued to descend at a moderate rate.

When it became evident that he could not regain control of the aircraft, the pilot entered autorotation while over a wooded area, then pulled all available pitch to cushion the aircraft and slow descent. The aircraft struck trees while still spinning to the right. On impact with the trees, the clockwise rotation stopped. The tail boom then hit a tree limb, causing the nose to pitch down steeply. The aircraft fell about 15 feet, struck the ground, and came to rest in a nose-low position, with the tail boom in the trees at about a 45-degree angle. The pilot and passengers evacuated the aircraft, with minor abrasions. There was no fire.

Additional pertinent information provided by the accident report shows the pilot was highly qualified and current, and had logged more than 3,000 hours of flight time. He was rested, and in excellent condition both physically and emotionally. Similarly, the aircraft was in excellent mechanical shape and no maintenance problems or materiel failure contributed to this mishap. As a matter of fact, accident investigators were in total agreement that "All aspects of the flight were found to be within limitations as prescribed by the operator's manual, with the exception of height/velocity (dead man's curve) for safe autorotation." So the question remains: What caused loss of tail rotor control in this as well as in other similar mishaps?

For the answer, let's revert to some basic fundamentals, keeping the following facts in mind:

- The pilot was fully qualified, and was in peak physical and mental condition for the mission.
- No mechanical or materiel problems contributed to loss of control.
- Low airspeed and altitude above ground level prevented a successful autorotation, but both were within the capabilities of the aircraft.
- Density altitude was high but not excessive.
- Aircraft gross weight was high but not excessive.
- Although the turning radius was short, the re-

sulting steep angle of bank did not exceed the aircraft's capability.

Now, let's inject some suppositions in a hypothetical situation by considering a pilot orbiting his aircraft to the right at low altitude, with his attention focused on some particular object on the ground. Should he fail to fly his aircraft by attitude, and instead fly by apparent ground speed, he may momentarily forget about the wind factor. Then, when he is headed downwind his indicated airspeed may be drastically reduced. In fact, if the wind were strong enough, he could conceivably be flying backwards with respect to the wind flow across his aircraft.

As the aircraft continues the turn, it will tend to weathervane on encountering a right quartering tailwind. Should this sudden action take the pilot by surprise, he may fail to apply left pedal until after the aircraft has completed a 270-degree turn. The tail rotor could then readily stall if he should jam full left pedal. This would render the tail rotor system totally ineffective, allowing the aircraft to continue to rotate because of engine torque.

When the nose of the aircraft swings through the original heading, the tail rotor will tend to come out of the stall. However, as the aircraft continues its turn into the wind and past it, the rotor could stall again. This cycle could repeat itself, misleading the pilot into believing the tail rotor has failed. Consequently, he may enter an autorotation. Since he is operating at a low altitude, the chances of his "bending" the aircraft are almost a certainty.

Going a step further, let's examine the events that take place when wind strikes a rotating aircraft from the left, flowing across the tail rotor. Let's suppose the velocity of the wind is 25 knots and the helicopter is rotating at 1 rpm, the equivalent of 6 degrees per second. Assuming the tail rotor blades to be in a neutral position, the angle of attack will be 3.5 degrees. Since the angle of attack of the blades can be varied approximately 17.5 degrees either side of neutral, if full left pedal is suddenly applied, the angle of attack will become 21 degrees (and these computations are figured for the blade tips). This means the entire tail rotor system will be stalled since the inner portions of the blades will stall first.

In reviewing this hypothetical situation, we can pick out several important factors that collectively resulted in a premature autorotation and a mishap.

1. Operation at a low altitude.
2. Operation at low airspeed.
3. Failure to fly the aircraft by attitude.
4. Failure to consider wind direction and velocity which resulted in failure to realize why the aircraft suddenly wanted to turn around.
5. The sudden jamming of left pedal which led to a tail rotor stall.
6. Failure to realize the tail rotor had stalled and not failed.

Had any one or two of these conditions not been present, the mishap might have been averted. But instead of eliminating any of these factors, let's include two additional ones: a heavy load for the existing density altitude and a steep bank angle during turns.

If our hypothetical aircraft was already near its maximum permissible gross weight for the prevailing density altitude, flight at low airspeed would necessitate near maximum power. Banking the aircraft would then create a demand for even more power if airspeed and altitude were to remain constant. Yet, the engine was already producing nearly full power. The result becomes obvious. Under these conditions, something has to give—loss of altitude, airspeed, and probable loss of tail rotor control.

Relating this information to the numerous OH-58 mishaps that have resulted from loss of tail rotor control, we can readily see that even though no single aircraft limitation may be exceeded, control problems and mishaps can occur under certain conditions of flight.

Prevention of mishaps from these causes depends in great measure upon the pilot and his supervisor. For example, proper supervision during briefing can make certain the pilot is aware of the conditions he can expect to encounter during an assigned mission so that he may be forearmed. In addition, supervision can ensure no greater demands are placed on man and machine than those actually required to complete a given mission. If low-level flight is not essential to accomplish the objective, then let's assign the pilot an altitude that will keep him within the height/velocity envelope. Similarly, if it isn't necessary for the pilot to confine his aircraft within a narrow parameter and to operate at a slow airspeed, then let's not place these restrictions on him. Instead, let's assign him an area that will permit a higher airspeed and a wider turning radius.

The pilot, in turn, needs to remain constantly aware of the prevailing conditions during any given phase of flight. He should fly the aircraft by attitude rather than by apparent ground speed, apply control inputs smoothly, and be aware of the approximate wind velocity and its direction. Should he then find himself with some control problem, he will be more likely to correctly diagnose the cause and take proper emergency measures.

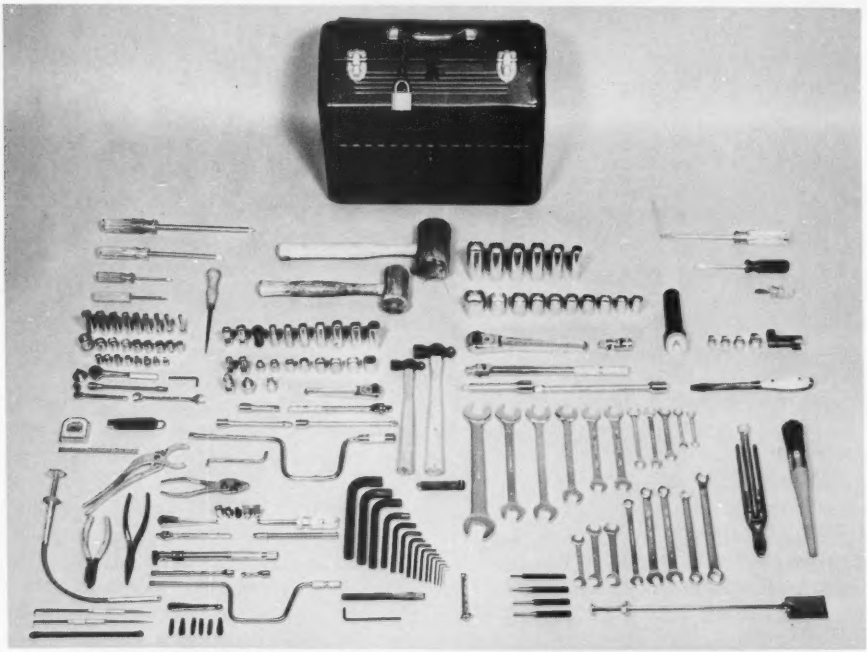
T700 Engine
A MECHANIC'S DREAM

Ken Nelson
U.S. Army Troop Support and
Aviation Materiel Readiness Command
St. Louis, MO

FOR 6 YEARS, the Black Hawk Project Manager's Office (PMO) has worked with the General Electric Company developing the T700-GE-700 Turbine Engine to power the Black Hawk (UH-60A) helicopter and the advanced attack helicopter (AAH).

One of the highest priorities established for the T700 engine, early in the planning phase, was that it must be easy to maintain by the mechanic in the Army's field environment. *How many shade tree mechanics have opened up the hood of the car and attempted to locate the fuel filter which was hidden in the carburetor or the oil pump which was buried inside the block?* This is basically the same situation the Army's mechanics are confronted with when opening the access panels to the engines on the current helicopter fleet.

In recognition of past history, a common goal to eliminate these mechanic's nightmares was estab-



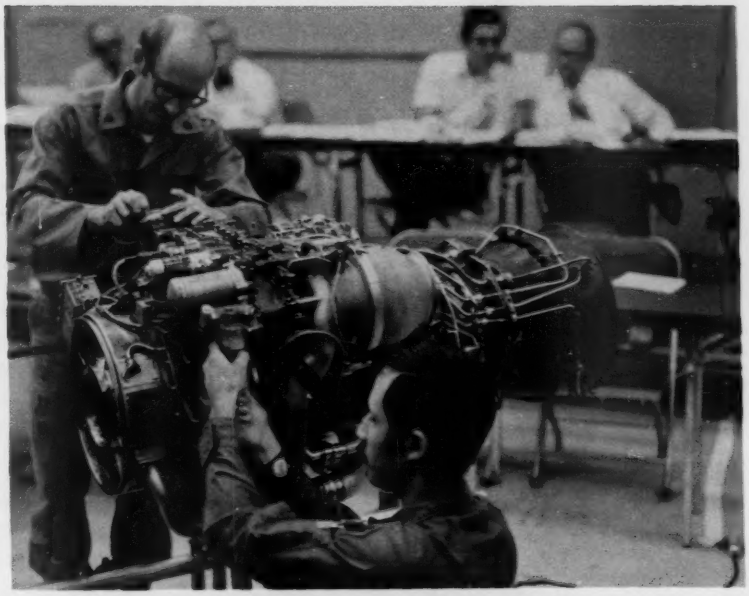
The T700 engine is designed to be maintained using common handtools found in the mechanic toolkit at unit level

lished. With the support of the U.S. Army Aviation Research and Development Command, U.S. Army Troop Support and Aviation Materiel Readiness Command and other Army organizations, the Black Hawk PMO and the General Electric Company in 1972 established a program to make the mechanic's dream come true. The first task accomplished was to develop an understandable set of requirements, everyday language of the users and a requirement not to hide the gadgets that fail frequently.

The engine is designed to be maintained using common handtools found in the engine mechanic standard toolkit at the aviation unit and intermediate levels of maintenance. To ensure maximum accessibility, the contractor was required to guarantee the removal and replacement times for all line replaceable units (LRU). Typical examples of the guaranteed removal and replacement times were: oil filter, 2 minutes; oil pump, 4 minutes; alternator, 4 minutes; electrical harness, 16 minutes; fuel filter, 4 minutes; and fuel pump, 3 minutes.

The second major understanding was that General Electric would show progress toward achieving the mechanic's dream by taking the very first development engine built and actually perform all envisioned maintenance tasks. This was accomplished using General Electric's mechanics with Army personnel witnessing the activity. All shortcomings and concerns were documented and provided to the contractor for resolution. This process was repeated on the preliminary flight ready engines installed in the competing Black Hawk prototype aircraft.

In May 1976, and prior to the acceptance of the official Model Qualification Test (MQT), General Electric was required to furnish an engine built to the MQT configuration for the official maintainability demonstration. Two typical engine mechanics were selected from



All maintenance was accomplished by Army mechanics for 4 weeks and task times recorded

Ft. Eustis, VA Engine Maintenance Facility, and trained for 2 weeks at the contractor's plant at Lynn, MA. For 4 weeks all maintenance actions were performed by Army mechanics and maintenance task times recorded. These actions included maintenance at all levels. During the performance of the maintenance tasks, maintenance personnel went to the General Electric plant to analyze and critique the engine. These participants were requested to document any problems they could envision when the engine entered normal field operation. These comments were screened and submitted to General Electric for resolution prior to accepting the MQT results.

The mechanic's dream engine will be fielded this year with numerous built-in maintenance features. Besides meeting the specified task times all line replaceable units and modules replacements can be accomplished with 10 common tools, requiring no special tools or adjustments at the field level. Line replaceable units requiring drives are provided with self-aligning splines, requiring no critical dimension or calibration check at the field level maintenance. To assist the mechanic in maintaining the engine "on-condition" provisions have been provided for borescoping, radiographic inspection, water washing and analyzing the oil condition. In addition, provisions for condition monitoring include chip detectors, oil and fuel filter impending bypass indicators, oil sight gauges, engine mounted life counter for hours, time temperature factor and low cycle fatigue, along with the normal fuel and oil monitoring devices.

All field and electrical connectors are "Murphy-proof" against interchange and wrench damage when performing maintenance. When the mechanic is required to remove a component, no safety wire is involved and when a seal is required, it is self-retained.

The first production T700 engines were accepted by the U.S. Army in March 1978, and shipped to Sikorsky for installation in the first production Black Hawk. Today the Army engine mechanic's dream is receiving its final touches before it becomes a reality.

ATC ACTION LINE

UNITED STATES ARMY AIR TRAFFIC CONTROL ACTIVITY

What does COPCOM mean?

The Controllers Operations and Procedures Committee (COPCOM) Program was established in September 1963 to encourage air traffic controllers to participate in the development and improvement of air traffic control (ATC) procedures (FAA Handbook 7110.65).

Controllers at all levels are encouraged to participate fully and express themselves freely and frankly to their area COPCOM representative. Take a look at paragraph 4 of FAA Handbook 7110.65 entitled "Recommendations of Procedural Changes," which encourages controllers to use COPCOM channels to get their ideas into the system.

Suggested improvements are funneled through the regional COPCOM committees directly to the Federal Aviation Administration (FAA) Washington headquarters without screening or review by intermediate commands. Suggestions are then circulated between the FAA and all military service headquarters having responsibility for ATC procedures. Many are adopted and help improve the ATC system for both controllers and pilots.

Army COPCOM members are located at each Department of the Army Regional Representative's Office at each FAA regional headquarters. Addresses for each regional office are located in AR 95-50. The representative for overseas locations is located at U.S. Army Air Traffic Control Activity, Aeronautical Services Office.

This is your most direct approach to good air traffic control procedures. This program has benefited Army controllers and pilots in the past and since we are starting a "New Year" in COPCOM, it can help you in the future.

Readers are encouraged to send questions to:
Director
USAATCA Aeronautical Services Office
Cameron Station, Alexandria, VA 22314

Infrared Jammer

SP5 Jerry E. Heikkila installs an AN/ALQ-144 infrared (IR) jammer on a JUH-1H helicopter at Ft. Drum, NY, for winter climatic tests. The IR jammer confuses IR-sensing devices, and thus helps protect aircraft from being tracked. Evaluations of the IR jammer have been carried out by the U.S. Army Aircraft Development Test Activity, Ft. Rucker, AL, for the U.S. Army Test and Evaluation Command.
Photo by Luther D. Rickman

Perry L. Gary
Directorate of Training Developments
Fort Rucker, AL

SFC Carl S. Harris
Directorate of Training Developments
Fort Rucker, AL

SQT—For 71P, 93H and 93J Eyes Only

DO YOU KNOW that the testing period for your military occupational specialty (MOS) starts this month? Have you received your test notices? Do you want to get the inside poop on how to pass the skill qualification test (SQT)? Read On! We'll show you how.

The SQT notices for your MOS were prepared by the Directorate of Training Developments at the U.S. Army Aviation Center, Ft. Rucker, AL. These notices are specifically designed to aid YOU in studying for your SQT. The notices have already been sent to your local test control officer (TCO) who will make distribution directly to you through your company. You should have your notice at least 60 days before testing. If you haven't received one yet, let your first sergeant know *now!*

What does the test notice do for you? First of all, each and every task that will appear on your written component (WC) will appear on your test notice. Each task has been taken directly from your Soldier's Manual by number and title. The standard for each task, that is the number of questions you must answer correctly to pass the task, is given. You also will be told what specific areas you will be tested on. The test notice will tell you where to go to study for the particular task and finally a sample question is provided to help you understand how you will be tested.

If your SQT has a performance certification component (PCC), the score sheet for each task will be included. The PCC is nothing more than a Soldier's Manual task which can be evaluated by your supervisor during your normal work day or during a field problem. For example, if your PCC is to type a letter, then one of your typed letters could be inspected and graded against the score sheet which is provided in your test notice.

Now that we have told you what the test notice is all about, the rest is up to you. Here are some hints to help you.

- **Get a copy of each reference listed in the test notice. Your MOS/SQT library is the place to go.**
- **Read the information given about each task with special emphasis on the subject that each question will cover. Don't try to study everything at one time. Make up a schedule and study a little at a time.**
- **Study the references given for each task. Make sure you spend extra time on those specific subjects listed in each task.**
- **To get ready for the PCC, you should practice each task that is listed. Use the score sheet since that very score sheet will be used by your supervisor when he evaluates you on that task. Get a buddy to help you while you practice.**

The test notice makes your studying easier. Notice we haven't said that the SQT is easy since it will take *a lot of hard work on your part* to bone up. Read your test notice today. Set up a study schedule and stick by it. Remember that the SQT is the key in your future to open all the doors.

TECHNOLOGY

projections

GUIDANCE

Welcome To The Army Aviation Systems Program Review (AAPR-78)

product improvement

systems implications

This year the AAPR features a new TRADOC system program review format geared to provide a firm analytical base on which to compare judgments that will determine the future course of Army aviation's system developments.

As a logical prelude to the AAPR-78, the Army Aviation Employment Conference (AVNEC) was held at Ft. Rucker last March. Its purpose was to achieve a consensus regarding Army aviation doctrine, tactics, employment concepts, and prioritization of new aviation equipment items for review indepth at this AAPR. (See June through September, *Aviation Digests*).

The four AVNEC study groups (Offense, Defense, Standardization/ Interoperability, and Personnel/Training) deliberated on 26 key issues and formulated more than 250 conclusions and recommendations. If adopted, these recommendations can have a major impact on the efficiency of the Combined Arms Team of the 1980's to accomplish its mission. Making full and appropriate use of them is now the goal. The recommendations have been interfaced with APPR-78 planning.

Key AVNEC issues identified and revalidated needs such as the ASH; helicopter air-to-air weapons systems; PNVS for the UH-60/CH-47; aviation nuclear-biological-chemical equipment; improved rockets; aircraft survivability equipment, and fuel and rearming point (FARP) hardware.

The Commander, United States Army Aviation Center, extends a warm welcome to those of you attending AAPR-78 and looks forward to an intensive and productive Systems Program Review. Above The Best!

ANALYSES

GOALS

interoperability